FIVE-MINUTES OF MINDFULNESS: UTILIZING GUIDED MEDITATION TO SUPPLEMENT ADHD TREATMENT PLANS IN ADOLESCENTS

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ABSTRACT

Lauren Louise O'Neill: Five-Minutes of Mindfulness: Utilizing Guided Meditation to Supplement ADHD Treatment Plans in Adolescents
(Under the direction of Katherine Peppers)

Background: ADHD can impair functioning in multiple areas (i.e., social relationships and academic/work productivity); pharmacological, behavioral, or combination treatment is recommended given its association with long-term adverse outcomes. Due to an individual's varying experience with a treatment's benefits or side-effects, a multitude of options should be available. One newer behavioral treatment option is mindfulness-based interventions (MBIs).

Objectives: The objectives of this project were to pilot implementation of an MBI as a supplemental treatment in patients 12 to 19 years old with ADHD at a pediatric behavioral health clinic and to observe a decrease in their ADHD symptom severity and insomnia severity.

Methods: The nurse practitioners and student investigator implemented the MBI during an office visit. Participants were educated about MBIs then instructed to practice a five-minute guided meditation daily for four weeks. Impact was measured by comparing pre- and post-intervention NICHQ Vanderbilt Symptom Scale Scores and Pediatric Insomnia Severity Index (PISI) scores along with analyzing patient evaluation feedback. Knowledge for future project sustainability and expansion was generated from provider, patient, and family feedback.

Results: There was an observed 41% decrease in Vanderbilt total symptom scores, 60% decrease in hyperactivity/impulsivity symptoms, and 27% decrease in inattentive symptoms. The PISI scores decreased by 53%, indicating a positive impact on sleep quality and habits. Participants largely believed the guided meditation had a positive impact on stress, relationships,

and everyday life; all planned on continuing to use the guided meditation. The impact of the global COVID19 pandemic, an unexpected high rate of refusal or resistance to participation, the high percentage of telehealth virtual visits, and a failure to complete the intervention all contributed to a smaller than anticipated sample size (n = 3).

Conclusion: Despite the unexpectedly small sample size, the results demonstrate that using an MBI, such as a guided meditation, as a treatment supplement can positively impact ADHD symptoms and sleep; patients also perceive a positive effect on stress, relationships, and everyday life. This project also identified potential barriers and facilitators to widescale MBI implementation with this population; this knowledge will inform future efforts of sustainability and expansion.

To all the members of my inner circle, you know who you are, who pushed me to finish. If not for your endless love and support, I never would have survived. And to my labradoodle, Oscar who forced me to take breaks for walks outside and sat by my side while I wrote this dissertation. You will never know how much your companionship means to me.

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LIST OF ABBREVIATIONS AND PHRASES

AD	Anxiety/depression
ADHD	Attention deficit hyperactivity disorder
APRN	Advanced practice registered nurse
CD	Conduct disorder
DNP	Doctor of Nursing Practice
EMR	Electronic medical record
HI	Hyperactivity/impulsivity symptoms
HIPAA	Health Insurance Portability and Accountability Act
IA	Inattentive symptoms
IRB	Institutional Review Board
MBI	Mindfulness based intervention
NP	Nurse practitioner
NP Champion	Dr. Katherine Peppers, owner of clinic serving as project site, lead provider of clinic, and site lead for project
ODD	Oppositional defiant disorder
PF	Performance
PISI	Pediatric Insomnia Severity Index
Student investigator	Lauren Louise O'Neill, author of manuscript
TSS	Total symptom score
UNC	University of North Carolina
Vanderbilt	NICHQ Vanderbilt Assessment Scale

CHAPTER 1: INTRODUCTION

Problem Description

Attention deficit hyperactivity disorder (ADHD) is a neurodevelopmental disorder that affects approximately 5% of children aged 2-17 years old (Centers for Disease Control and Prevention [CDC], 2019) and 4.4% of adults (National Institute of Mental Health, 2017). Attention deficit hyperactivity disorder can greatly impair social interactions as well as academic and work productivity. Given the profound influence that ADHD can have on different aspects of an individual's life, treatment is strongly recommended. First line therapy for ADHD is pharmacologic management with a stimulant, but research has shown that behavioral therapy utilized in conjunction with pharmacological therapy produces better symptom management (Cairncross & Miller, 2016). Additionally, some patients experience adverse side effects or no response with stimulant medications; these patients may opt for behavioral based therapy instead (American Academy of Child and Adolescent Psychiatry [AACAP] and American Psychiatric Association [APA], 2013). Mindfulness-based interventions (MBIs) have been shown to significantly reduce ADHD core symptoms of inattention and hyperactivity/impulsivity (Cairncross & Miller, 2016; Evans et al, 2017; Xue et al, 2019); Zhang et al, 2018).

Local Context

In North Carolina, the prevalence of ADHD in children is over 11%; of these children, over 80% receive pharmacological therapy but less than 40% receive behavioral-based treatment (CDC, 2019). At a pediatric behavioral health clinic in Raleigh, North Carolina, a pediatric mental health specialist, Dr. Katherine Peppers DNP, CPNP, stated that her patient population

includes adolescents and young adults aged 12 to 21 years old living with ADHD. She confirmed that there are patients whose current pharmacological and behavioral therapy has not yet helped them reach their treatment goals and that they would benefit from additional intervention. Additionally, she verified that MBIs were not yet part of their current treatment regimen but believes it would be a beneficial addition to her practice (K. Peppers, personal communication, August 21, 2019).

Purpose

The purpose of this DNP project was to decrease the severity of ADHD core symptoms of inattention and hyperactivity/impulsivity in adolescents aged 12-19 years old by implementing a mindfulness-based intervention at a local pediatric behavioral health clinic in Raleigh, North Carolina. A guided meditation was used as the MBI utilized during this project; providers and the student investigator (Lauren Louise O'Neill) provided the initial education regarding mindfulness and how to use the guided meditation during a regular office visit. Patients were also given an educational hand-out to reference at home. Patients were expected to practice the guided meditation daily until their next follow-up visit four weeks later. The impact of the project was measured utilizing pre and post-tests of self-reported or parent-reported National Institute for Children's Health Quality (NICHQ) Vanderbilt Assessment Scales scores (Appendix A), a pediatric insomnia severity index tool (Appendix B), and a questionnaire assessing the patient's evaluation of the MBI (Appendix C). The goal of this project was to not only see a reduction in ADHD core symptoms of inattention and/or hyperactivity/impulsivity but also see patients and/or parents find it useful in coping with management of the patients' ADHD symptoms and stress as well as positively impacting social relationships and everyday life.

Significance of Outcomes to Nursing

The outcomes of this scholarly DNP project were significant to nursing because the overall purpose of this project was to improve both short and long-term patient outcomes. Hopefully, patients would benefit from the MBI in the short-term, which would be observed through a decrease in ADHD symptom scale scores and through a perceived benefit in everyday life. Additionally, better management of ADHD symptoms can help prevent/decrease long-term adverse outcomes such as poor academic performance or impaired social relationships. This project also educated providers in another treatment option they can utilize to supplement their patients' current treatment plans. This kind of intervention also relies heavily on patient use, meaning that the more that patients practice mindfulness with the MBI, the more benefit they will gain from it. Educating patients and offering this tool empowers patients to take a more active involvement in their overall health and well-being.

CHAPTER 2: REVIEW OF THE LITERATURE

Search Strategy

Initially, both PubMed and CINAHL databases were searched for relevant evidence to support this project. Two searches were completed to support the existence of the problem as well as the intervention. The first search terms utilized for the PubMed search included Attention Deficit Disorder with Hyperactivity [Mesh] AND Mindfulness [Mesh]. Additional searches were also done with target population age (Adolescent [Mesh] OR Young Adult [Mesh]; however, all relevant research regarding MBI use, regardless of age, in the treatment of ADHD was reviewed because it is still a new topic. The second search terms utilized for the PubMed search included Attention Deficit Disorder with Hyperactivity [Mesh], (outcome OR effect OR impact) AND systematic [subset]. The CINAHL database search was similar, but with corresponding subject headings instead of Mesh headings. The only exclusions were studies not in English and those that did not specifically use an MBI as an intervention (for the first search); there was no limit of the years searched. Initially, approximately 50 articles regarding MBI as an intervention and 10 articles regarding long-term outcomes of ADHD were found; five and two were included in this matrix and review, respectively. Additionally, one narrative review was included because it provided a broad overview of the disorder, including recent research, causes, and treatment. Many of the articles that discussed MBIs were excluded because they were part of the meta-analyses or systematic reviews included in this literature review. Others were excluded because they either detailed an MBI, such as martial arts, that was not going to be used in this DNP project or they were highly biased or flawed studies that were not of high enough quality to merit

inclusion. Similarly, many of the studies regarding long-term outcomes were excluded because they were either not systematic reviews or meta-analyses or they detailed outcomes like the two articles included but were much smaller or lower quality.

Long-term Outcomes Associated with ADHD

Three articles, including two systematic reviews and one narrative review, were included in the matrix that supports the clinical problem (Erskine et al, 2016; Shaw et al, 2012; Tarver et al, 2014). These articles indicated that there are many adverse long-term outcomes associated with ADHD in many different areas of life including academic and social achievement, substance abuse, and mental health. This literature review focused on the long-term adverse outcomes of ADHD as the problem, as opposed to other aspects, because of the nature of the DNP project. By enhancing the treatment plan and management of ADHD in younger populations, hopefully some of these long-term adverse outcomes can be avoided. These two reviews are the most recent and highest quality reviews with the largest number of included studies that encompass a wide range of adverse outcomes (Erskine et al, 2016; Shaw et al, 2012).

Erskine et al (2016) found that individuals with ADHD, compared to those without, were three times more likely to fail to complete high school and six times more likely to not attend tertiary school. There were also significant associations between ADHD and depression (OR = 2.3, 95% CI 1.5-3.7, Q = 38.08, p<.01, I2 = 68.49%), bipolar disorder (OR = 7.1, 95%CI 2.0-24.8, Q = 1.01, p = .80, I2 = 0), suicide attempts (OR = 2.5, 955CI 1.6-3.77, Q = 5.17, p = 0.52, I2 = 0), and panic disorder (OR = 2.5, 95%CI 1.1-5.5, Q=1.06, p=0.79, I2=0). However, this study failed to compare treated versus untreated outcomes which would have been beneficial to further support or refute the benefits of treatment.

72% of those whose ADHD is treated with pharmacological and/or non-pharmacological therapy demonstrated better long-term outcomes than those who are not. Even though their outcomes do not normalize with treatment, 74% of untreated individuals with ADHD experience poorer long-term outcomes. More specifically, more than 50% of treated groups showed benefit in driving, obesity, self-esteem, social function, academic, drug/addictive, antisocial, and services used outcome categories. Only 33% of those treated saw benefit in the occupation outcomes category (Shaw et al, 2012).

Because long-term outcomes for those with ADHD do not normalize even with pharmacological and non-pharmacological treatment (Shaw et al, 2012), there is a continued need for additional non-pharmacological treatment options. These additional treatment options can further enhance the treatment and management of ADHD and consequently improve long-term outcomes. Furthermore, some parents and patients do not want to treat with pharmacology or the adverse side effects may preclude their use (Tarver et al, 2014). This supports the need for developing additional, non-pharmacological treatment options for ADHD, such as MBIs (Erskine et al, 2016; Shaw et al, 2012; Tarver et al, 2014).

Except for the narrative review, which is level 5 (Tarver et al, 2014), the remaining two articles are level 1 and of moderate or high quality (Erskine et al, 2016; Shaw et al, 2012). Some of the weaknesses included not measuring ADHD symptoms on valid scales, not comparing treated versus untreated outcomes (Erskine et al, 2016), and not separating age groups (Shaw et al, 2012). The Tarver et al (2014) article did not have any kind of sample or research since it was a narrative review.

Erskine et al (2016) included 101 ADHD related studies in their final meta-analysis and analyzed the adverse outcomes in those under 18 years of age by conducting follow-up between 2

and 40 years. These studies were mostly from the United States with some from Canada, New Zealand, Western Europe, and Asia. The sample sizes of the studies ranged from 71 to under 2 million and included both sexes and a multitude of ethnicities (Erskine et al, 2016).

Shaw et al (2012) included 351 studies in their final analysis. The study populations ranged from six to one million participants aged 10 years and older; however, the age groups were split into child, adolescent, and adult categories. The study samples included both sexes and a wide variety of ethnicities. Study duration was between 2-40 years. The studies were conducted across the world including Northern America, Europe, Latin America, Eastern and Western Asia and Oceania (Shaw et al, 2012).

Theory of Mindfulness

The overarching theory of mindfulness is broad and abstract, although some scholars have tried to propose a defined model of mindfulness to increase usability in the scientific and medical world (Bishop et al, 2004; Kabat-Zinn, 2003; Shapiro et al, 2006). The original concept of mindfulness stems from primarily ancient Buddhist beliefs, but also incorporates Hindu and Chinese philosophies. The foundation of mindfulness involves both conscious awareness and attention to surrounding external and internal stimuli. Additionally, all variations of the theory of mindfulness involve maintaining a nonjudgmental and receptive state of mind, instead of a reactive one, when faced with the various thoughts, sensations, experiences, and emotions that result from the surrounding internal and external environment (Baer, 2003; Brown et al, 2007; Hayes, 2003; Ie et al [Eds.], 2014; Kabat-Zinn, 2003; Langer, 2002; Olendzki, 2005). The idea is to gain a nonreactive viewpoint that can also be flexible enough to focus in on situational details or zoom out to visualize a larger perspective. However, one key stipulation is that a mindful state of consciousness entails active and continuous engagement, it does not encourage a

dissociation from one's experience. This allows for existence in the present moment, as opposed to the past or future (Brown et al, 2007; Langer, 2002).

The Westernized theory of mindfulness was initially, and still primarily, applied to the field of psychology and is used to help explain a different way to cognitively interact with oneself and the surrounding environment in a more productive manner. There are many schools of thought regarding the Western concept of mindfulness. Jon Kabat-Zinn is frequently credited with Westernizing the theory of mindfulness with his creation of the mindfulness-based stress reduction (MBSR) technique. This technique promotes full awareness of the present moment (Baer, 2003; Ie et al [Eds.], 2014; Kabat-Zinn, 2003; Olendzki, 2005). Ellen Langer's theory is more grounded in a social-psychological approach of continually recognizing new aspects of situations (Demick, 2000; Ie et al [Eds.], 2014; Langer, 2002).

The theory of mindfulness and its accompanying concepts have demonstrated benefit in individual's mental health and psychological well-being (Brown et al, 2007; Kabat-Zinn, 2003). Consequently, many of the concepts pertaining to the theory of mindfulness are primarily applied in the field of psychology. There are many different established therapy programs that are based in mindfulness; these programs include mindfulness-based stress reduction (MBSR), mindfulness-based cognitive therapy (MBCT), dialectical behavior therapy (DBT), acceptance and commitment therapy (ACT), and relapse prevention treatment (Baer, 2003; Brown et al, 2007).

Mindfulness-Based Interventions

To support utilizing MBI as an intervention for ADHD, four meta-analyses and/or systematic reviews and one narrative review was included in the matrix (Baijal & Gupta, 2008; Cairncross & Miller, 2016; Evans et al, 2017; Xue et al, 2019; Zhang et al, 2018). The narrative

review was included to offer explanations as to why this intervention is effective and how it works. For example, MBI improves both attentional capabilities as well as emotional and behavioral self-regulation. In addition, many individuals with ADHD frequently experience impulse control and an increase in feelings of frustration and anger (Baijal & Gupta, 2008). Areas improved by MBIs parallel those that are impaired in both subtypes of ADHD: inattention and impulsivity.

All four of the meta-analyses and/or systematic reviews demonstrate that MBIs are effective in decreasing the severity of the core symptoms of ADHD, such as inattention and hyperactivity/impulsivity. For example, Cairncross & Miller (2016) found that MBIs significantly reduce both ADHD core symptoms of inattention (ES -.66 [95% CI -0.916, -0.404; Z = -5.046, p<.001]) and hyperactivity/impulsivity (ES-.53, [95% CI -.736, -.319], Z=4.967, p<.001). This meta-analysis included ten different studies, with unknown countries of origin, that included participants of all ages and sexes. Of the 195 total participants in all the studies, approximately 42% were adolescents (Cairncross & Miller, 2016).

Xue et al (2019) also found that MBIs have a positive impact on both categories of ADHD core symptoms. In their meta-analysis, they found that MBIs are more effective on inattention-type symptoms with a significant effect size (g = -0.825, 95% CI = -1.161, -0.488, Z = -4.805, P<.001); although not significant, MBIs still have a large effect size on hyperactivity/impulsivity symptoms as well (g=-0.676, 95% CI=-0.975, -0.377, Z=-4.433, P<0.001, I2=76.24%). This meta-analysis included 11 studies conducted in Germany, the United States, the Netherlands, China, Iran, and Israel. Combined, these studies included 682 participants of both sexes, 210 children, aged 8 to 17 years old, and 472 adults aged 18 years and older (Xue et al, 2019).

Similarly, Zhang et al (2018) found that in children and adolescents, MBIs have a larger effect size on inattention symptoms (g=-0.52, 95% CI -0.81 to -0.23, I2 0%) than

hyperactivity/impulsivity symptoms (g=-0.40, 95% CI -0.68 to -0.12, I2 0%). In adults, this meta-analysis found a significant effect size for all combined symptom scores (g=-0.66, 95% CI -1.21 to -0.11) as well as inattention only (g=-0.81, 95% CI -1.55 to -0.08) but not hyperactivity/impulsivity only (g=-0.70, 95% CI -1.48 to 0.09). This meta-analysis included 13 randomized controlled trials conducted in numerous different countries that included participants of all ages and sexes; ages ranged from 5 to 50 years old. Six of the studies included participants 12 to 21 years old which is the target age range of this DNP project (Zhang et al, 2018).

However, Evans et al (2017) found mixed results in their systematic review. Only 8 of the 12 included studies showed a large effect sign in the reduction of ADHD symptoms (largest ES 2.2). But the studies that did not show an improvement or showed in increase in ADHD symptoms were yoga and martials arts-based interventions, which is not the focus of this DNP project. The 12 studies included in this systematic review took place in numerous countries across the world and included both male and female children and adolescents under 18 years old (Evans et al, 2017).

These studies also included a large variety of the types of MBI utilized, such as mindful movement (i.e. yoga) (Evans et al, 2017; Zhang et al, 2018), meditation (Cairncross & Miller, 2016; Evans et al, 2017; Xue et al, 2019; Zhang et al, 2018), mindfulness-based stress reduction (Cairncross & Miller, 2016; Evans et al, 2017; Xue et al, 2019), mindfulness based cognitive therapy (Cairncross & Miller, 2016; Evans et al, 2017; Xue et al, 2019), or workshops and classes (Cairncross & Miller, 2016; Evans et al, 2017; Xue et al, 2019; Zhang et al, 2018).

The quality of the evidence supporting MBI as an intervention for ADHD was either level 1, consisting of meta-analyses of randomized control trials (Xue et al, 2019; Zhang et al, 2018), level 3, consisting of systematic reviews of quasi-experimental studies (Cairncross & Miller, 2016; Evans et al, 2017), or level 5, a narrative review (Baijal & Gupta, 2008). The major limitation

found in these articles was that some of the individual studies included in the meta-analyses/systematic review were weaker studies because they were pre-posttest design and not randomized or blinded. It is also unclear what symptom scales were used; some studies mentioned using validated scales such as Vanderbilt (Appendix H), but many do not go into detail regarding the characteristics of the individual studies.

Summary

The results of the literature review demonstrate that there are many long-term adverse outcomes associated with ADHD and that these outcomes can impair functioning in multiple areas of an individual's life. However, treatment (including pharmacological, non-pharmacological, or a combination) can result in more favorable outcomes (Erskine et al, 2016; Shaw et al, 2012). Furthermore, research has shown that pharmacological treatment is not always fully effective, may cause adverse side effects, or individuals may opt against pharmacological treatment. Therefore, it is important to have a multitude of non-pharmacological treatment options available for patients to try (Cairncross & Miller, 2016; Erskine et al, 2016; Shaw et al, 2012). One such treatment are MBIs, which have been shown to be effective in decreasing the severity ADHD core symptoms such as inattention and hyperactivity/impulsivity (Cairncross & Miller, 2016; Evans et al, 2017; Xue et al, 2019; Zhang et al, 2018). Prior to implementing this DNP project, a local, pediatric behavioral health clinic in Raleigh, North Carolina did not utilize MBIs in their patients aged 12-21 years old as part of their treatment plan for ADHD. This DNP project, supported by this literature review, involved implementing a MBI at this clinic in this patient population.

CHAPTER 3: METHODOLOGY

Conceptual Model

The Plan-Do-Study-Act (PDSA) model was utilized as the method for evaluation and improvement of the project throughout implementation. This model allows for changes to be tested, evaluated, and improved in real time throughout the duration of the project (Moen & Norman, 2010; IHI, 2019). The PDSA cycle process is designed to be a prediction-based test of change comprised of iterative, rapid, small-scale cycles; each individual PDSA cycle consists of four stages (Taylor et al, 2013). The idea is to plan a change, do, or implement, this change, study the results, and act on what is learned. During the final act stage, the change can be fine-tuned or adapted based on what was learned, abandoned completely, or adopted into practice. The cycle then repeats, either with the adapted process from the previous cycle, or with a new change altogether (IHI, 2019; Moen, 2009; Moen & Norman, 2010; Taylor et al, 2013). By linking together these individual PDSA cycles, knowledge can also be accumulated to inform future cycles (Moen & Norman, 2010).

This conceptual model was chosen to help guide the DNP project because the PDSA cycles not only allow for modifications throughout the project duration, but they emphasize the importance of adapting the project based on feedback from both measured outcomes and individuals involved. This flexibility combined with multiple, rapid cycles and assessment increases the likelihood of successful improvement and reaching the desired aim. Starting with small cycles also minimizes the risk to patients, the organization, and resources if the intervention or change is ineffective (Moen, 2009; Taylor et al, 2013).

Project Design

The purpose of this DNP project was to decrease the severity of ADHD core symptoms of inattention and hyperactivity/impulsivity in adolescents and young adults aged 12-21 years old by implementing a mindfulness-based intervention, consisting of a five-minute guided meditation, at a local pediatric behavioral health clinic in Raleigh, North Carolina.

This scholarly DNP project was a quasi-experimental research design that utilized a pre-post comparison group design. This project design was utilized so the effectiveness of the intervention on the desired outcomes could be evaluated. The quasi-experimental research design was also beneficial because it is less expensive than randomized controlled trials while still meeting some of the requirements of causality. In order to maximize the number of participants, randomized control versus comparison groups were not used; instead, all possible participants were recruited, and pre-post testing was applied (Schweizer et al, 2016).

A logic model was utilized as a visual depiction of the association between project's needed resources (inputs), planned activities (outputs), and intended impact (outcomes). The model also detailed assumptions and perceived barriers related to the project. This tool was helpful to communicate these aspects of the project to stakeholders, which helped support the need for the project (Appendix D) (Administration for Children and Families, n.d.).

The PDSA model was utilized for overall program development, implementation, and evaluation to allow for project adaptability to allow for adjustments to maximize the overall impact. The intended intervention was a five-minute mindfulness-based intervention (MBI) in adolescents and young adults aged 12 to 21 years old diagnosed with ADHD. The MBI was a guided meditation, developed and recorded by the student investigator that involves various established mindfulness techniques such as focusing on breathwork, noting, and body scanning.

Participants

Project participants included three APRNs who are board certified pediatric nurse practitioners (NPs) who care for the patients at the clinic and serve as the primary clinic providers. These providers, along with the DNP student, were the ones implementing the MBI during the office visits. The lead NP of the clinic (Dr. Katherine Peppers) is also the owner of the clinic; she served as the site lead and NP champion for this project. She will henceforth be referred to as the NP champion for the remainder of this dissertation. Other project participants included the front office staff, consisting of a receptionist and medical assistant, who served as key personnel in the identification of potential project participants and reminding providers to approach patients.

The target patient population was adolescents aged 12 to 19 years old with a diagnosis of ADHD. Patients could be new or established patients to the clinic and could have other comorbidities or diagnoses. Patients were excluded from analysis if they underwent any other therapy change, i.e., medication change, throughout the duration of the project.

Recruitment and Consent

Patients that were 12 years of age and older and diagnosed with ADHD were eligible to be recruited as possible participants; this recruitment would occur during their regular office or telehealth visit. Providers advocated for the benefit of the program and encouraged patients to participate. Those that were agreeable to supplementing their current treatment plan with the MBI were immediately included in the project. Written consent was obtained from the patient as well as the parent if the patient was a minor.

Ethics and Human Subjects Permissions

Approval for this project was received from the Institutional Review Board (IRB) at the University of North Carolina (UNC) prior to implementation.

Setting and Population

The setting for this DNP project was an outpatient pediatric behavioral and developmental health clinic located in Raleigh, North Carolina. The clinic is privately owned and although not publicly advertised, the providers, staff, and many patients and their families consider it to be a Christian practice. This clinic serves children, adolescents, and young adults aged 2 to 21 years old; providers assess, diagnose, and treat a variety of pediatric behavioral and developmental health disorders including ADHD, autism, anxiety, depression, mood disorders, nutritional disorders, and learning and intellectual disabilities. The clinic offers comprehensive medication management, counseling and therapy, and diet, nutrition, and exercise guidance and recommendations.

Key Stakeholders

Given that there are only three providers and two other staff members involved in this project, all five were considered key stakeholders; however, the owner and lead provider of the clinic served as both the champion of this project and site manager. This champion helped facilitate project development and implementation as well as advocated for the need of an MBI for this population. Buy-in from these providers and staff members was critical for the success of this project; providers and staff that were engaged and supportive of this project were also likely to believe in the efficacy of MBIs and benefits they can provide their patients. This confidence in the MBI can help increase buy-in from patients which is essential to increase compliance to daily use of the MBI. Finally, the target population and their families were also key stakeholders.

Implementation

Originally, project duration was planned to span twelve total weeks beginning March 29th, 2021. However, due to delays in receiving IRB approval, the project did not launch until April 26th, 2021 and was shortened to an eight-week duration.

Site Preparation

The project idea and rational was initially vetted through the NP champion who discussed the project with the other two NPs. With support from these key roles, the project was introduced to the rest of the clinic staff during a staff meeting. The first day consisted of educating providers and staff about the recruitment and implementation process specific to their role in the project. All three NPs were knowledgeable about MBIs and their potential benefit prior to the project's launch; they were all supportive of the project and consequently did not require education relating to MBIs and the potential positive impact they could have with patients. Education was facilitated by the student investigator and the NP champion. Providers were educated on which patients would be eligible for project inclusion, how to access guided meditation and how to send it to patients, and the process to collect the recruitment packet paperwork. The receptionist and medical assistant were educated on the purpose and relevance of the project, eligibility requirements for patients, and the process for obtaining the recruitment packet paperwork. The medical assistant was also asked to remind the providers of patients that she identified as potential participants during check in.

The student investigator developed the MBI by writing and recording a five-minute guided meditation (Appendix E). The audio file of this guided meditation was emailed to all three NPs and downloaded onto the two clinic cell phones. These cell phones are utilized by the

NPs, receptionist, and medical assistant to contact patients and would be used to send the guided meditation audio file to patients during the initial visit.

A variety of supplemental materials were also developed by the student investigator. These supplemental materials included an educational handout for providers (Appendix F), educational handout for patients (Appendix G), project brief for providers and office staff (Appendix H), and post-intervention patient MBI evaluation questionnaire (Appendix C). Each of the three NPs were given laminated copies of the project brief and educational handout for providers for reference during implementation. The receptionist and the medical assistant were each given a laminated copy of the project brief for reference during implementation. The student investigator also built patient recruitment packets and follow-up packets. The recruitment packets consisted of the IRB consent signature form, the HIPAA consent form, the Vanderbilt assessment (Appendix A), the Pediatric Insomnia Severity Index (PISI) (Appendix B), and the educational handout. The follow-up packets contained the Vanderbilt assessment, PISI, and patient MBI evaluation survey. These packets were stored by the reception desk in a plastic magazine rack labeled "Patient Recruitment Packets" or "Patient Follow-Up Packets"; next to this rack was another empty rack labeled "Completed Paperwork" for the packets once patients were recruited. The contact information for the student investigator was posted by these magazine racks and listed on the project brief. The student investigator also prepared electronic, fillable/clickable PDF versions of all the components of both the recruitment and follow-up packets; these would be emailed to the telehealth patients for completion.

Participant Recruitment and MBI Implementation Process

This following section describes the clinic work-flow process that was utilized during the patient recruitment and MBI implementation phases of this DNP project. Providers started

delivering the MBI during patient visits beginning April 26th, 2021; during the first three days of implementation, the student investigator was on site to facilitate implementation by delivering the MBI to patients, observing providers deliver the MBI, and address any questions and issues that arise. As previously stated, patients at least 12 years old and diagnosed with ADHD were recruited as participants; patients who experienced any other alteration in treatment, including medication changes, were excluded from data analysis. Many times, the parents accompanied the child during the visit; if so, these parents were welcomed to participate in the MBI as well.

Patients that were eligible for participation in the project were identified by either the medical assistant, receptionist, or provider by reviewing the daily appointment schedule. If the medical assistant or the receptionist identified a possible participant, she would notify the provider at check-in.

Once potential eligible participants were identified, providers would approach the patient, and their parent if applicable, and facilitate a discussion about mindfulness, the MBI, and the project during the office or telehealth visit. During this conversation, providers assessed patients' current knowledge or previous experience regarding mindfulness and meditation practice and discussed the basic concepts behind mindfulness and how it could benefit their patients both overall and specifically in relation to their ADHD symptoms. Providers would also answer questions that patients, and their parent if applicable, had and offered additional advice when beginning their mindfulness journey. If patients, and their parent if applicable, were agreeable to participating, the provider would give the recruitment packet to the patient for completion. If the visit was occurring in-person, then patients/parents completed the recruitment packet in the office during the visit. If the visit was occurring over telehealth, patients/parents could either complete the recruitment packet verbally over the video call or give verbal consent during the

visit then have the recruitment packet emailed to them for completion. These patients were instructed to complete the electronic, fillable/clickable PDF forms and email them back to the clinic email as soon as possible, preferably right after the visit concluded. The medical assistant would then print out the completed packet and place it in the "Completed Paperwork" magazine rack. If the student investigator was on site that day, she would also come into the office at this point to introduce herself, the project, thank the patient for participating, and answer any additional questions. Completed patient recruitment packets were collected by the student investigator if she was on site or placed in the "Completed Paperwork" magazine rack on the reception desk.

Once the initial consents and pre-intervention screenings were completed, the provider would facilitate the first guided meditation with the patient by accessing the audio file from either their email it was delivered to or one of the two clinic cell phones that had the guided meditation downloaded onto it. Providers ensured that the environment was quiet, and that the session would not be interrupted. All participants were instructed to find a comfortable seated position, either seated in a chair with legs on the floor or sitting cross legged on the floor. The provider played the downloaded guided meditation and participated alongside the patient. Following the meditation, providers could assess the patient's initial reaction to the guided meditation. Providers then reinforced the most important information about the MBI, encouraged daily practice at home, and provided the educational handout for patients (Appendix G). At follow-up, providers were welcomed to ask patients about their home practice and overall experience.

The MBI was implemented and evaluated with all available patients over the course of the project duration. Because the project was delayed and projected to end June 17th, 2021, the

last set of patients whose participation was evaluated as part of the project occurred the week of May 17th, 2021. However, as this was intended to be a permanent practice change, providers did not stop offering the MBI after this date; they continued to offer the MBI throughout project duration and after its completion.

Patient Education and Instruction

Patients were instructed to practice this MBI daily over four weeks until their next follow-up appointment. They were also given an educational handout (Appendix G) that detailed how to practice the MBI at home and guidance on how to gain the most benefit from the daily practice. The educational handout also included additional online resources that patients and their families could utilize to supplement the MBI. These resources were recommended by the American Academy of Pediatrics (AAP) and included general information about mindfulness and additional guided meditations (AAP, 2016). It was recommended to patients to complete the guided meditation at night before bed to help promote sleep. Because developing a new habit, like practicing meditation can be difficult to remember, patients were encouraged to attach listening to the meditation to another habit; for example, patients should listen to the meditation after brushing their teeth. By doing this, it was hoped that patients would be triggered to remember to do the guided meditation when brushing their teeth at night. Prior to leaving the clinic, patients were either texted or emailed the downloadable guided meditation audio file; providers ensured that patients were able to access the guided meditation on their device.

Follow-Up Process

This following section describes the clinic work-flow process that was utilized during the follow-up phase of this DNP project. Patient follow-up began the week of May 24th, 2021, four weeks after the first initial visit. Originally, the follow-up process designated the medical

assistant and the providers as the ones to obtain follow-up from patients/parents; the medical assistant would obtain follow-up from patients with in-person office visits and the provider would obtain follow-up from telehealth patients. All clinic staff would be alerted to when follow-up visits would occur through a list developed by the student investigator. During site preparation, the student investigator prepared follow-up packets that contained the Vanderbilt assessment (Appendix A), PISI (Appendix B), and patient MBI evaluation survey (Appendix C). These packets were stored by the reception desk in a plastic magazine rack labeled "Patient Recruitment Packets"; next to this rack was another empty rack labeled "Completed Paperwork" for the packets once completed. Patients/parents with in-person office visits would be given the follow-up packet by the medical assistant, complete them, then return them to the medical assistant who would place them in the "Completed Paperwork" magazine rack. Telehealth visit patients/parents would complete the follow-up packet verbally on the video call with the provider. Alternatively, if the patient/parent or provider preferred or if time was an issue, the follow-up packet could be emailed to the patient/parent with electronic, fillable/clickable PDF forms to be downloaded, completed, and emailed back to clinic email. The medical assistant would then print out the completed packet and place it in the "Completed Paperwork" magazine rack.

However, due to the unanticipated small number of five patients successfully recruited into the project, it was decided that the student investigator and NP champion would obtain the follow-up for all five patients to ease the burden on clinic staff. All five patients that needed follow-up had in-person office visits; there were no telehealth patients successfully recruited for participation.

On Monday, May 24th, 2021, the student investigator identified when the follow-up appointments for the five patients would take place. Two of the visits took place prior to the project's projected end date of June 17th, 2021. The student investigator was on site for the first follow-up appointment and met with the participant at the conclusion of his visit; she facilitated an informal and brief conversation with the participant and had him complete the follow-up packet. Unfortunately, the student investigator could not be on site for the other follow-up visit that was within the project's duration so the NP champion, who was also this patient's provider, facilitated the follow-up conversation and packet completion during the visit.

Follow-up for the three other recruited participants occurred over telephone with the patient and her parent; it was revealed during this phone call that two of the patients never listened to the guided meditation after that initial visit. An informal discussion was conducted with these two participants and their parents to ascertain causes for failing to complete the intervention and the opinions held on the project and guided meditation during the initial visit. Due to failure to complete the intervention, the full follow-up packet was not completed with these two patients and apart from reporting the reasons for failure to complete intervention, they were excluded from results and analysis. The third patient who did use the guided meditation at home completed the follow-up packet verbally with the provider over the video call; the completed packet was then given to the student investigator.

PDSA Cycles

When this DNP project was originally conceived, the plan was to have two complete PDSA cycles. The first PDSA cycle would occur the week of March 29th, 2021, with site preparation, staff education, patient recruitment, and MBI implementation; the follow-up for these patients would occur four weeks later. This would allow for one week to evaluate the

project and make adaptations before the second PDSA cycle began. Feedback obtained from the post-intervention patient MBI evaluation questionnaire (Appendix C) and informal discussions with providers, clinic staff, patients, and parents would help guide any project adjustments or improvements that should be made to help maximize the success potential. The second PDSA cycle would begin with additional patient recruitment the week of May 10th, 2021. The follow-up visits for the second PDSA cycle would occur the week of June 7th, 2021, with an extra week after for final data collection before the project concluded on June 18th, 2021. Additionally, even though there were two full PDSA cycles embedded in the project's duration, patients would continue to be recruited throughout duration and not just during the weeks listed. The last set of patients who participation was evaluated as part of the project would have occurred the week of May 10th, 2021.

However, because the project launch was delayed by almost a month due to a longer than anticipated amount of time to receive IRB approval, the duration of the project was shortened and patient recruitment into the study ended (May 21st, 2021) before the first week of recruited patients were seen for follow-up (week of May 24th, 2021). As a result, two full PDSA cycles with formal evaluation periods were unable to be completed. Instead, feedback from providers, patients, parents, and clinic staff was collected throughout the duration of the project via informal discussions; this feedback was utilized to make real-time adjustments or changes to the project as needed. These changes were then immediately implemented as the project continued, regardless of where in its duration the project currently was. The goal was to increase the number of patients successfully recruited into the project as it progressed; this would help generate more results and knowledge gained from this project.

Outcomes and Measurement

The primary project outcomes were an observed decrease in ADHD core symptoms demonstrated on NICHQ Vanderbilt Symptom Scale Scores and patient perception of a benefit on managing their ADHD symptoms and stress as well as improvement in social relationships and overall everyday life. Secondary outcomes were a decrease in the Pediatric Insomnia Severity Index (PISI) scores, provider attitude and belief towards utilizing MBIs with their patients, knowledge gained from this project that could be utilized for project sustainability or expansion, and identification of barriers and facilitators of the project (Appendix I). Outcome measures included the patients' evaluation of the intervention and their experience, the Vanderbilt scores, the pediatric insomnia severity index scores, and the providers' evaluation of the intervention and overall project.

The Vanderbilt is a reliable and valid tool utilized to both diagnose ADHD and monitor symptom and performance improvement with treatment (American Academy of Pediatrics, 2014). Bard et al (2013) reported that the Vanderbilt produced a sensitivity of 80%, specificity of 75%, positive predictive value of 0.19, and negative predictive value of 0.98 in predicating the presence of ADHD. They also reported a test-retest reliability that exceeded 0.80 for all summed scale scores (Bard et al, 2013). Although eligible patients have an established ADHD diagnosis, the initial parent-informed Vanderbilt form was used; this version is much more comprehensive regarding symptoms and comorbidities than the follow-up form. The follow-up form also includes a section about medication side effects that we were uninterested in.

The Pediatric Insomnia Severity Index (PISI) is a tool used to evaluate the clinical symptoms of pediatric insomnia; Byars et al (2017) reported that the PISI was reliable in terms of sleep-onset problems ($\alpha = 0.81$) and sleep maintenance ($\alpha = 0.62$). The primary outcomes of

this project were measured through collection of quantitative data, utilization of pre- and post-tests of the Vanderbilt scores as well as a post-intervention patient evaluation questionnaire developed by the student investigator (Lauren O'Neill). The secondary outcomes were measured from quantitative data obtained from pre and post-tests of the Pediatric Insomnia Severity Index (PISI) scores, informal discussions with providers as well as some aspects of the post-intervention patient evaluation questionnaire. The PISI was utilized as a secondary outcome measurement because it could show a quantifiable benefit to utilizing an MBI sooner than the Vanderbilt scores would; evaluation of the MBI occurred after 4 weeks of use, and the Vanderbilt scores may not move significantly in that amount of time (K. Peppers, personal communication, February 5th, 2021).

Data Collection

It was current practice at the project site to obtain both the Vanderbilt and PISI scores at each visit for a patient with ADHD (K. Peppers, personal communication, November 19, 2019 & February 5th, 2021). These Vanderbilt and PISI scores served as the pre-intervention outcome data for participants. The pre-intervention outcome data for providers consisted of informal discussions that will take place prior to education and implementation. Outcome data was then re-evaluated 4 weeks after implementation and classified as the post-intervention results. It was the current practice at the clinic for patients to complete paperwork at the beginning of their visit in the waiting room. This included a variety of scales, such as the Vanderbilt and PISI scores, to assess the patient's current state. To help ease data collection, the student investigator built patient recruitment packets and follow-up packets for patients to complete before implementation and after four weeks for follow-up, respectively. These packets were either given to patients during their follow-up appointment or completed verbally over a telephone call. The

recruitment packets contained IRB and HIPAA consent forms, the Vanderbilt and PISI surveys, and the educational handout for patients. The follow-up packets contained repeat Vanderbilt and PISI surveys and the post-intervention patient MBI evaluation questionnaire.

The student investigator was on site during the first three days of implementation, weekly throughout implementation, and during follow-up to ensure data collection and address any issues or questions that arise. The student investigator and NP champion facilitated collection of follow-up data of recruited participants by either attending the follow-up appointments of participants or calling participants/parents to complete follow-up over the phone.

Demographic data was abstracted through electronic medical record (EMR) review by the student investigator; this demographic data included the following: age, gender, ethnicity, insurance carrier, ADHD subtype classification, comorbidities, and current treatment plan, such as use of pharmacology. Any participants that underwent an alteration to their treatment plan, for example a medication change, would have been flagged and excluded from data analysis; however, none of the participants necessitated removal due to a treatment plan change.

The demographic data was collected by the student investigator and then stored on a password-protected Excel spreadsheet; although the student investigator temporarily had access to the EMRs, only those of the recruited patients were viewed. The medical assistant and providers at the clinic reviewed the EMRs to identify eligible participants for recruitment. All data collected were de-identified, ensuring patient privacy. Data that was abstracted from the EMR for the purposes of this project was done so in a way that it could not be connected to the identities of the patient. The abstracted data set did not include any direct identifiers (i.e., date of birth, social security number).

Each patient recruitment packet was assigned a consecutive identification number (1, 2, 3, …), then each component of the that packet was labeled with the assigned identification number. Participants were then assigned this number so their identity remained confidential. The follow-up packets, and their components, were labeled identically to the recruitment packets. A coding list was created to ensure that participants received the correct follow up packet. All collected data and coding list were kept secure following the UNC rules and regulations regarding data and information storage. The compiled results of the study may be published in scientific research journals or presented at a professional conference, but do not contain individually identifiable information.

Throughout the project, informal check-ins were held with providers and clinic staff to assess how the project was progressing and how greater success could be facilitated. Provider and clinic staff input of the overall project was also collected following completion of the project. Informal discussions were also held with patients and parents throughout the duration of the project, and at follow-up, and related to their experience utilizing the MBI, the perceived impact the MBI had on various aspects of their life, causes of refusal or resistance to participate in project, and barriers to regularly using MBI. All these informal conversations with providers, clinic staff, patients, and parents occurred either in person or over the telephone. The NP champion also helped collect and report this feedback. No identifying information was collected in conjunction with this qualitative data; all feedback was recorded as field notes. See Appendix B for questions utilized to help guide these informal discussions with providers, clinic staff, patients, and parents.

Data collection from all sources was completed on June 17th, 2021.

Data Storage

The secure UNC OneDrive through Office365@UNC was utilized to store all electronic data, such as the data excel spreadsheet; this secure electronic storage database is a password protected server behind a firewall. All paper data, including consents, Vanderbilt and PISI forms, and post intervention patient evaluation questionnaires were stored in a locked file cabinet throughout the duration of the project. Upon completion of the project, data was abstracted from these paper forms and added to the electronic excel spreadsheet stored on the UNC OneDrive. The paper documents were then disposed of by shredding, which is a HIPAA approved way to dispose of documents containing confidential patient information.

Data Analysis

Data analysis of the quantitative data consisted of descriptive statistics; originally inferential statistics, such as a t-test, planned to be utilized as well, but was unable to be calculated given the small sample size of three. Quantitative data was collected from the demographic data abstracted from the EMR, the post-intervention patient evaluation questionnaire designed to measure program outcome measures, and the pre- and post-intervention Vanderbilt and PISI scores of the patients. These results were reported as percentages and raw numbers to evaluate the degree to which project outcomes were met; quantitative data was also organized into both tables and charts to display patterns in the results.

The qualitative data collected by the student investigator and NP champion from discussions with providers, clinic staff, patients, and parents as well as the open-ended questions on the patient evaluation questionnaire were analyzed by conducting content analysis and seeking themes in the content. Qualitative data was collected and analyzed throughout the project to inform of project adaptations that should occur.

Communicating Results

Given the small sample size of the project, the student investigator was unable to provide strong evidence of the effectiveness of utilizing an MBI, such as a guided meditation, in adolescents and young adults 12 to 21 years old with ADHD at this clinic. Instead, providers were encouraged to continue discussing MBIs and their potential benefit with patients they believed could benefit based on their clinical judgment. A summary of the findings including barriers to patient buy-in, participation, and compliance was discussed with the NP champion who will use that knowledge to inform future projects and goals to implement MBIs at the clinic.

Anticipated Barriers and Facilitators for Implementation

Successfully implementing an effective change initiative is difficult and there are numerous elements that can facilitate or hinder the outcome of a DNP project. Organizational or systems issues can serve as barriers that can have a profound impact on not only the project's effectiveness but also how the project is designed and implemented (Dixon-Woods et al, 2012). The success of this MBI depended on both provider and patient engagement. A lack of provider buy-in could negatively impact how well the MBI is initially delivered and even decrease the patient's belief in its potential benefit, resulting in a lack of compliance to daily practice of the guided meditation (Agency for Healthcare Research and Quality [AHRQ], 2014; Dixon-Woods et al, 2012). A lack of buy-in could be due to skepticism of the project's potential efficacy (ASC Communications, 2011) or the provider's potential lack of self-efficacy in successfully delivering the intervention (Small et al, 2016). Doubting the project's potential for positive change could stem from confusion or a lack of knowledge from either the provider or patient.

To help facilitate the project and prevent these potential barriers, the provider knowledge regarding mindfulness and MBIs was assessed prior to implementation and any knowledge gaps

were addressed. Education was facilitated by the student investigator and NP champion. Confidence in implementing MBIs with their patients were also assessed, and gaps were addressed as needed; additionally, frequent check-ins throughout the project duration were conducted to gauge the providers' experience and assess for any additional educational needs. Providers were also be supplied an educational brochure and project brief to reference during the implementation phase (Appendices F and H). Completion of this education with providers hopefully facilitated patient education during the initial delivery; each patient who participated in the project also received an educational brochure for reference at home (See Appendix E). Having providers advocate for the benefits of this intervention and adequately instructing patients about mindfulness and the guided meditation will hopefully increase compliance with daily practice.

As previously mentioned, the owner and lead provider of the clinic served as the site lead and NP champion of this project throughout its duration; she advocated for the project's potential benefit and displayed enthusiasm to patients, other providers, and clinic staff. It was hoped that buy-in would be increased by both patients and clinic staff with the NP champion functioning as the project's facilitator. The student investigator also chose to measure the impact of the project utilizing Vanderbilt and PISI scores that were already obtained at each patient visit (K. Peppers, personal communication, November 19, 2019 & February 5th, 2021); this avoided placing an additional burden on clinicians or clinic staff to gather additional data or perform extra assessments for outcomes measurement. The student investigator and NP champion also collected all the follow-up data which further eased the project's burden on staff's day-to-day workload.

To further facilitate the success of the project, a simple and short intervention was utilized. Given the numerous competing demands on a busy clinician in a complex health care environment, lack of time is frequently cited by clinicians as a barrier to quality improvement (Wilkinson et al, 2011). Minimization of the time demand of the MBI could help overcome this barrier should it prevent clinician engagement in the project (IHI Open School, 2014). As an example, it would be significantly easier to persuade a clinician to incorporate a five-minute MBI into their visit as opposed to a lengthier MBI, such as a multi-day workshop.

Unanticipated Barrier

One unanticipated barrier that impacted the methodology of this project was the COVID19 global pandemic. When this DNP project was originally conceived, all office visits took place in person at the clinic and thus the implementation process plan was developed assuming that eligible patients for project participation would all have in-person visits at the clinic. However, the COVID19 pandemic occurred prior to the start of the project and greatly disrupted normal operations at the clinic; all in-person visits transitioned to virtual telehealth appointments. Shortly before this project commenced, in-person office visits had resumed but unfortunately almost 75% of patient visits were still occurring virtually with telehealth (K. Peppers, personal communication, April 26, 2021).

This high rate of virtual, telehealth visits as opposed to in-person visits was unknown until the project was introduced at the staff meeting on the project launch date. The implementation process plan for this project was not optimized for telehealth visits and thus was quickly adjusted in an attempt to include these telehealth patients as participants. The adjustments made to meet the inclusion needs for telehealth patients is described in the implementation section above. For example, the student investigator developed electronic,

fillable/clickable PDF versions of all the components of both the recruitment and follow-up packets that would be emailed to the telehealth patients for completion. Alternatively, the packets could be completed verbally by the provider during the telehealth visit; however, this greatly increased the time burden on providers as the packet could take 10-15 minutes to complete verbally. Delivering the MBI during that initial office visit by participating in the guided meditation together is also harder to accomplish via telehealth.

The use of virtual, telehealth appointments eliminates patient contact with the receptionist and the medical assistant who served as key personnel in the identification of potential project participants and reminding providers to approach patients. As a result, providers were informed that they would need to identify and recruit eligible telehealth patients for participation themselves.

Sustainability

Sustainability following project completion is largely dependent on the provider's willingness to continue utilizing this MBI as a supplement to their patient's current treatment plan. Following project completion, the clinic was provided copies of the educational materials for both providers and patients. Additionally, the guided meditation was emailed to patients and providers as a downloadable audio file and was also downloaded on the two clinic cell phones that are utilized for patient contact by providers and clinic staff. Providers now have the knowledge and materials needed to continue offering this MBI as a supplement to their patient's treatment plan; they simply have to choose to initiate a discussion with patients they think, based on their clinical knowledge, could benefit from trialing an MBI, such as a guided meditation, as a supplement to their current treatment plan.

The long-term goal of this project is continued expansion of the use of MBIs to other patients in the clinic being treated for mental and behavioral health issues other than ADHD. This project helped generate a lot of knowledge regarding patient/parent perceptions of MBIs as well as barriers to implementation and compliance that can be utilized to inform future projects or efforts to use MBIs as a treatment option at this clinic.

Anticipated Resources and Budget for Implementation

Resources that were anticipated included provider and patient time, the educational materials developed for both providers and patients, the technology to record the guided meditation, and an available computer or phone with internet access for patients. This project had minimal to no cost to the clinic since all materials were developed by the student investigator and no additional patient visits were added for intervention delivery or follow-up. The largest indirect cost was provider and clinic staff time required for education, implementation, and feedback discussions.

CHAPTER 4: RESULTS

The primary desired outcome of this project was to confirm that implementation of a MBI at an outpatient behavioral health clinic would successfully decrease ADHD core symptoms, demonstrated on NICHQ Vanderbilt Symptom Scale Scores (Appendix A), and cause a patient perceived benefit with managing their ADHD symptoms and stress as well as improving their social relationships and overall everyday life. Secondary desired outcomes are a reported decrease in the Pediatric Insomnia Severity Index (PISI) scores (Appendix B), a positive provider attitude and belief towards utilizing MBIs with their patient, and generation of knowledge from this project, including identification of barriers and facilitators, that can be utilized for project sustainability or expansion. These outcomes were measured utilizing pre-post intervention Vanderbilt and PISI scores, a post-intervention patient questionnaire, and informal discussions with providers, patients, and parents. The following results present an overview of the outcomes of the intervention during the time period of April to June 2021.

Impact of COVID19

When this DNP project was originally conceived, all office visits took place in person at the clinic. However, prior to the start of the project, the pandemic involving SARS-CoV-2 and its resultant disease COVID19 greatly disrupted normal operations at the clinic; all in-person visits transitioned to virtual telehealth appointments. Shortly before this project commenced, in-person office visits had resumed but unfortunately almost 75% of patient visits were still occurring virtually with telehealth (K. Peppers, personal communication, April 26, 2021).

Unanticipated Small Sample Size

Although at least 50 patients were expected to participate in this project prior to implementation, only three patients are reported in the results section. It is believed that this unanticipated small sample size was the result of three differing underlying causes: the impact of telehealth, the unexpected high rate of refusal or resistance to participate, and failure to complete the intervention after the initial visit.

High Percentage of Telehealth Virtual Visits Versus In-Person Visits

As previously mentioned, this project was originally designed to be implemented with in-person office visits; however, throughout the duration of this project, 75% of patient visits were occurring virtually as opposed to in-person visits. Although the methodology design was changed at project initiation to try and include these telehealth patients and providers were informed about the project and supportive of it, no patients were successfully recruited through telehealth. It was learned that this occurred for four different reasons: it was unclear if providers should be recruiting patients through telehealth, providers simply forgot or did not mention the project to their patients, patients did not submit pre-test paperwork, or patients were not interested.

Even though providers were informed to recruit telehealth patients that met eligibility criteria, a couple of the providers reported that they were unsure that they would be the ones identifying patients, instead, they thought that the student investigator would be on site daily to identify patients and inform the providers of upcoming appointments.

Providers also reported forgetting to discuss the project and MBI with patients when they were successfully identified. The use of virtual, telehealth appointments eliminated patient contact with the receptionist and the medical assistant who served as key personnel in the

identification of potential project participants and reminding providers to approach patients. Providers reported that they did not have any kind of reminder other than themselves to discuss the project with patients; because the project was not a high priority in their mind or a regular part of their routine, they often forgot. Providers also reported feeling busier and more rushed with patients when their day is mostly comprised of telehealth appointments and acknowledged that implementing a new intervention with their patients does require additional time and effort that they did not always have.

There were also a couple of instances where patients were agreeable to participating in the project during the telehealth visit. Electronic versions of the consent form, HIPAA consent form, Vanderbilt assessment, PISI assessment, and patient educational handout were emailed to the patient for completion. Despite reminder emails and phone calls, no forms were ever completed and returned.

Unexpected High Rate of Refusal or Resistance to Participation

Among the numerous patients that were approached about the project, there was an unanticipated high rate of declination among both patients and/or their parents to participate. Various reasons to refuse participate were expressed by patients and/or parents:

"There's too much going on already to add one more thing."

"Feeling overwhelmed with the pandemic and trying to go back to normal."

"Feels like too much with the pandemic and everything."

"I do not want my child to have their cell phone in their room at night"

"I tried meditation before, I'm not interested"

"I don't think I'll like it."

"I don't think it'll help me."

"Isn't meditation Buddhist? We are practicing Christians and do not want to introduce other religions."

Failure to Complete Intervention

At the start of the project, five participants, and their parents if of minor age, consented to participating in the project. However, two of those five failed to complete the intervention after the initial visit. This was discovered after contacting patients to obtain follow-up four weeks after recruitment. Both patients reported "completely forgetting" to do the meditation after leaving the initial visit. Neither expressed negative opinions about the guided meditation either during the initial visit or during the follow-up conversation and remained open to trying an MBI in the future.

Sample

Three patients, and their parents if of minor age, consented to participating in the project and successfully completed the intervention at least once after the initial visit. The age range was from 17 to 18 years old, with an average age of 17.33 years old. One patient identified as a black male and the other two identified as white females. One of the three patients had Medicaid insurance, the other two had private insurance from either Blue Cross Blue Shield or United Health Care. All three participants had combined subtype, meaning they met diagnostic criteria for both the inattentive and hyperactive/impulsive subtypes (American Academy of Pediatrics, 2014). Both of the female participants were on pharmacological management for their ADHD, utilizing a drug from either the amphetamine or methylphenidate class; the male patient was undergoing regular cognitive behavioral therapy sessions. The three participants also possessed various comorbidities such as anxiety, depression, or a learning disability. Figure 1 displays the demographic data for all three of the participants. As demonstrated in the figure, each participant

was assigned a number that will be utilized for the remainder of this dissertation as their identifier.

Figure 1: Demographic Data of Participants

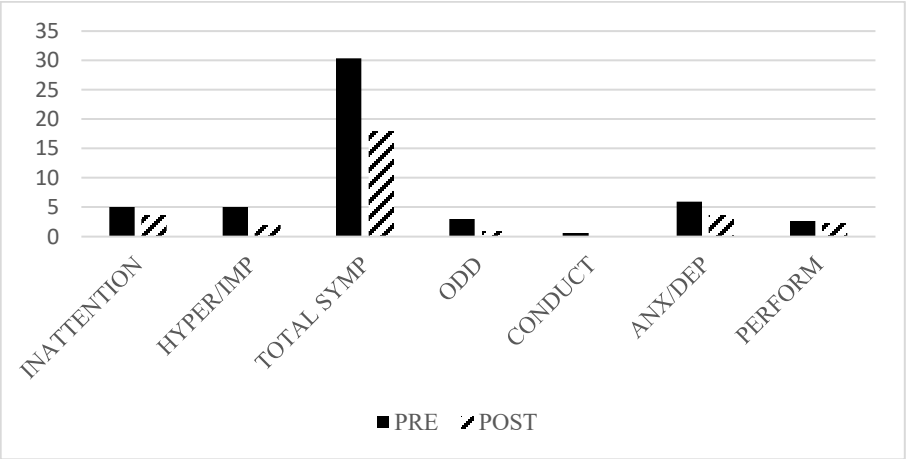
	Age	Gender	Ethnicity	Insurance	Comorbidities	ADHD Subtype	Current treatment	Changes to therapy
Participant 1	18	Male	Black	Medicaid	Learning disability, cerebral palsy, asthma	Combined	Cognitive Behavioral Therapy	No- undergoing weekly therapy sessions
Participant 2	17	Female	White	United Health Care	Anxiety, autism, learning disability	Combined	Adderall XR, Adderall IR	No
Participant 3	17	Female	White	Blue Cross Blue Shield	Depression, bulimia nervosa, anxiety	Combined	Propanolol, Effexor XR,	No

NICHQ Vanderbilt Assessment Scale Scores

Similar to the PISI, the Vanderbilt was administered to participants at inclusion of the project (prior to beginning the guided meditation) and again four weeks later. For assessment and scoring, the Vanderbilt is divided into six different categories: inattentive symptoms (IA), hyperactivity/impulsivity symptoms (HI), total symptom score (TSS), oppositional-defiant disorder (ODD), conduct disorder (CD), anxiety/depression (AD), and performance (PF). The performance (PF) category assesses how the patient is performing in various academic and social areas. When summarized as a group, the results demonstrate a decrease in all six categories. The average inattentive symptom score decreased by 27%, (5 to 3.67) and the average hyperactivity/impulsivity score decreased by 60%, (5 to 2). The total symptom score decreased by 41% (30.33 to 18). Oppositional defiant disorder and conduct disorder scores fell by 67% (3 to 1) and 100% (0.67 to 0), respectively. Anxiety and depression symptom scores showed a 13% decrease (6 to 3.67) and overall performance scores were reduced by 13% (2.67 to 2.33). Figure

2 displays the summary of the changes to the group average for each category of the Vanderbilt score.

Figure 2: NICHQ Vanderbilt Assessment Scale Scores - Group Average



However, not every participant experienced a decrease in each category of the Vanderbilt score. One participant, participant 3, showed an increase in numerous categories including inattentive symptoms, total symptom score, and overall performance; there was no change with her oppositional defiant disorder score. Other than those few exceptions, all three participants demonstrated decreases in each of the seven subsections of the Vanderbilt. Most notably, participant 1 experienced a 94.4% decrease in his total symptom score and a participant 2 displayed a 47.8% decrease in her total symptom score. Figure 3 displays the summary of individual patient results for each of the Vanderbilt categories.

Figure 3: NICHQ Vanderbilt Assessment Scale Score Results

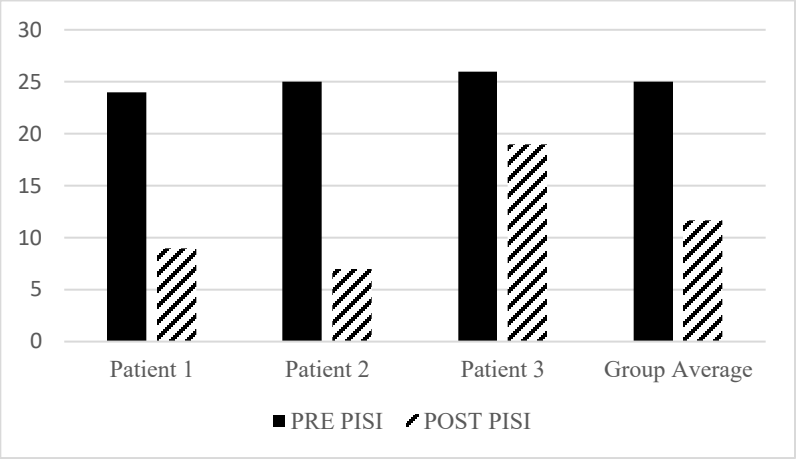
	Pre IA	**Post IA**	**Pre HI**	**Post HI**	**Pre TSS**	**Post TSS**	**Pre ODD**	**Post ODD**	**Pre CD**	**Post CD**	**Pre AD**	**Post AD**	**Pre PF**	**Post PF**
Pt 1 (18M)	2	0	3	0	18	1	0	0	1	0	5	3	4	2
Pt 2 (17F)	7	2	9	4	46	24	6	0	0	0	7	3	1	1
Pt 3 (17F)	6	9	3	2	27	29	3	3	1	0	6	5	3	4
Group	5	3.67	5	2	30.33	18	3	1	0.67	0	6	3.67	2.67	2.33
%↓		27%		60%		41%		67%		100%		39%		13%

Legend: AD; anxiety/depression; CD- conduct disorder; HI- hyperactivity/impulsivity symptoms; IA- inattentive symptoms; ODD- oppositional defiant disorder; PF- performance; Pt- Participant/patient; TSS- total symptom score; %↓- percent decrease of group average

Pediatric Insomnia Severity Index

The pediatric insomnia severity index (PISI) was administered to participants at inclusion of the project (prior to beginning the guided meditation) and again four weeks later. The maximum PISI score at any given time is 30. The average pre-intervention PISI score among participants was 25 and the average post-intervention PISI score was 11.67, resulting in a 53% decrease. Additionally, all three participants demonstrated a decrease in their individual PISI score, indicating a positive effect of the guided meditation on sleep habits and difficulties. Figure 4 shows the change in the individual and average PISI scores.

Figure 4: Pediatric Insomnia Index Severity Score Results



Post Intervention Patient Questionnaire - Quantitative

In addition to completing repeat PISI and Vanderbilt scores, participants also completed a post-intervention patient questionnaire (Appendix C) during follow-up after four weeks; as previously mentioned, this purpose of this questionnaire was to gather additional quantitative and qualitative data related to the patient's experience.

There was some variance as well as consistency among participants' responses. For example, all three participants utilized the guided meditation in varying amounts; participant 1, the 18-year-old black male, utilized the guided meditation about once a week whereas the two 17-year-old female participants utilized the meditation 4-5 times a week or almost daily, respectively. All three participants found it very easy to access the guided meditation at home with no issues but none of the participants accessed the supplemental resources, such as websites of mobile apps, listed on the pamphlet they were given at the start of the project.

Participants were also asked to answer a series of questions regarding how the guided meditation has impacted them by utilizing Likert scale data; response choices included not at all (1), a little (2), somewhat (3), quite a bit (4), a lot (5). The responses for the first question about participants' overall feeling of the guided meditation were very negative (1), negative (2), neutral

(3), positive (4), and very positive (5). Overall, participants had a positive (4.33) feeling towards the guided meditation. Although the level of impact varies, the results indicate that the guided meditation had a positive impact on ADHD symptoms (2), stress (3.67), relationships with others (3.33), and everyday life (3). Participants also enjoyed using it (3.67) and will continue to use it in the future (3). Participants also felt adequately prepared to practice at home (3.67) and that providers properly educated them (4.67). Figure 5 displays the average response of the three participants and Figure 6 shows the individual response results for each question.

Figure 5: Group Response Average of Likert Questions

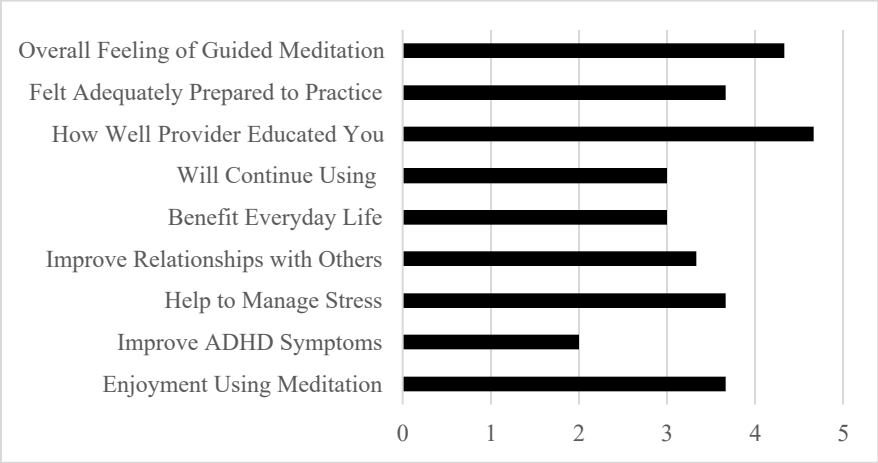
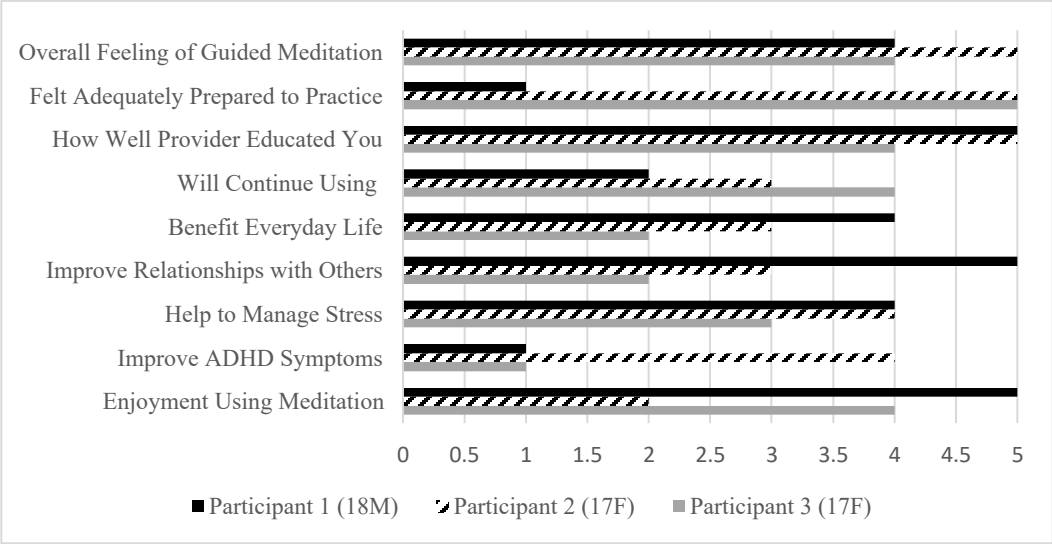


Figure 6: Individual Responses of Likert Questions



Post Intervention Patient Questionnaire - Qualitative

There are also a couple of open-ended questions on the post-intervention patient questionnaire. All of the participants' responses supported a perceived benefit of the guided meditation on their sleep or relaxation; this was shown on various responses on the questionnaire:

"Helped with calming down in the evening"

"Helped wind down at night"

"Made it easier for her (the participant) fall asleep. She's not up until 2 or 3 am, more like 11pm."

"Made me sleepy"

Through their responses, participants and/or their parents also identified various perceived barriers to practicing the meditation daily:

"I just straight up forgot some days"

"She (the patient) did not really enjoy doing it so some days I (the parent) just didn't want to fight her"

"Some days I was exhausted and fell straight asleep, didn't need any help"

"Life just sometimes got in the way and I didn't want to do one more thing"

CHAPTER 5: DISCUSSION

The primary goal of this DNP project was to decrease the severity of ADHD core symptoms of inattention and hyperactivity/impulsivity in adolescents aged 12-19 years old by implementing a MBI at an outpatient pediatric behavioral health clinic. However, due to a variety of factors, the number of recruited participants was much lower than initially anticipated. Additionally, the results among the three participants were mixed; two experienced a decrease in total symptom score (94% and 23%) and the third reported a slight increase in total symptom score (7.4%). The small sample size and mixed results make it difficult to generalize the findings and conclude that a five-minute guided meditation utilized as a supplement to treatment for ADHD is effective is decreasing the severity of symptoms. Instead, it indicates that a guided meditation may work for some patients and not for others; however, given the simplicity of the intervention and low risk if it is ineffective, trialing MBIs, such as short, guided meditations, can be recommended for this population.

The secondary goal of this DNP project was to trial and sustainably implement an MBI at this clinic as a supplement to treatment in adolescents and young adults with ADHD. Utilizing MBIs at this clinic is not a regular part of practice for providers and so this DNP project served as way to identify facilitators and barriers to implementation with this patient population. As the project progressed, it became clear that this secondary goal would serve as the main purpose of this project. Numerous barriers to implementation, especially reasons for resistance or refusal to participate, were identified, including many that were not predicted by the staff and the DNP student. Identification of these barriers and discussion of how to overcome them will fuel the

success for future attempts of implementation at this clinic. Implementing MBIs remains a goal for the clinic and this DNP project successfully served as a significant learning experience. Even though the small sample size made the primary goal of the project unable to be met, the amount of knowledge learned from that failure to recruit made the overall DNP project a success.

Impact of COVID19 Pandemic

While the full effect of the COVID19 pandemic on this project is unknown, it is clear that the pandemic did impact the project. Living through the global COVID19 pandemic has had detrimental impacts on the psychological well-being and mental health of not only health care workers, but the general population as well. The effects of the pandemic, including social isolation, drastic changes to "normal" activity, and job loss, have contributed to an increase in reported depression and anxiety symptoms. During the pandemic, 40% of adults in the U.S. reported these symptoms, whereas only 10% reported these symptoms the year prior (Panchal et al, 2021). Public health officials have also coined the term "pandemic fatigue" to encompass the wide range of feelings, such as burnout, exhaustion, or feeling overwhelmed, that can be experienced as a result of living through the global COVID19 pandemic. Pandemic fatigue can present in many ways, but some people may feel restless, irritable, lack motivation, or feel anxiety and depression symptoms such as changes in sleeping and eating patterns (Badre, 2021; Public Health in the Community, 2020).

The COVID19 pandemic was cited as one of the reasons that patients/parents declined to participate in the project. Some stated that they were already feeling overwhelmed or exhausted and did not have the mental energy or time to add a new routine to daily life. This project also took place while the state and local area was lifting restrictions and returning to pre-pandemic operations; this also had a negative impact on the willingness to participate. Interestingly, the

existence of the pandemic for almost a year prior to the start of the project as well as the beginning of a "return to normal" during the project caused a dual impact on feelings of fatigue or being overwhelmed which resulted in an unwillingness to participate in the project.

Impact of Telehealth as a Result of COVID19 Pandemic

The existence of the pandemic also resulted in a shift of the patient visits to occur virtually via telehealth as opposed to in-person visits at the clinic. Because the recruitment and implementation process of this project was developed and optimized for in-person visits, it was difficult to successfully recruit participants through telehealth. In fact, no telehealth patients were successfully recruited into the project. Because 75% of patients at the clinic were being seen through telehealth throughout the duration of the project, it can be assumed that this contributed to the unexpectedly low sample size of the study.

The high percentage of telehealth appointments at the start of this DNP project was unknown and thus the project implementation plan was not optimized for telehealth visits. The project was introduced at a staff meeting on the launch day; it was at this meeting that it was revealed that most patient visits were telehealth visits. In response, providers were informed to recruit patients that met the eligibility criteria. However, a couple of the providers reported that they were unsure that they would be the ones identifying patients, instead, they thought that the student investigator would be on site daily to identify patients and inform the providers of upcoming appointments. This problem was eventually rectified, but still resulted in a loss of potential patients. Developing and educating clinicians on a clearer implementation plan before the start of the project would have been more beneficial.

There were also a couple of instances where a telehealth patient was agreeable to participating in the study, but never completed the patient recruitment packet despite multiple

emails and phone calls. The packet, containing consents and pre-intervention screening measures, was emailed to him as downloadable fillable/clickable PDFs that could be downloaded, completed, and emailed back to the clinic. On reflection, completing the patient recruitment packet verbally over video chat during the telehealth visit would have been a better option. Although this would be more time consuming for both the provider and patient, it would have ensured successful enrollment.

Providers also reported forgetting to discuss the project and MBI with patients when they were successfully identified. Given the numerous competing demands on a busy clinician in a complex health care environment, lack of time is frequently cited by clinicians as a barrier to quality improvement (Wilkinson et al, 2011). Managing a patient schedule that is comprised primarily of telehealth appointments can also increase the workload of providers. With telehealth visits, providers are the only ones who have contact with patients and thus need to complete the work usually completed by the receptionist and medical assistant (Adams, 2021). Discussing and implementing a new project requires additional time and effort that providers do not always have.

Underlying Causes of Refusal or Resistance to Participation

Only a small number of patients were successfully recruited into the project despite numerous patients that were approached about participation. The recruited sample size of five was much smaller than anticipated when the project was developed. The COVID19 pandemic and its effects was not the only reason cited when patients/parents declined to participate in the project. Other reasons included parents not wanting the device in the adolescent's bedroom, their belief that meditation is Buddhist and not wanting to introduce this religion into their Christian homes, and refusals because of a lack of patient buy-in.

Parents Do Not Allow Electronic Devices in Child's Room at Night

The guided meditation was distributed to patients as a downloadable audio file; this audio file was typically downloaded onto the adolescent's or parent's phone. Patients were then instructed to practice the guided meditation before bed, with a recommendation to practice the meditation after they brushed their teeth at night. A few of the parents stated that they did not allow electronic devices, such as cellphones, in their adolescent's room at night. Because this was the only available method of accessing the guided meditation, a few parents declined participation. A way to circumvent this barrier is to offer the guided meditation is an alternative format. This will be discussed in more detail in the implications for future project section below.

Meditation Believed to be a Buddhist Practice

Parents' refusal to participate based on religious beliefs was the most unexpected barrier to participation that was encountered during this project; when this project was developed, it was not anticipated that parents or patients would refuse the guided meditation because of religious beliefs. The clinic is privately owned and although not publicly advertised, the providers, staff, and many patients and their families consider it to be a Christian practice. Although the guided meditation that was developed for this project (Appendix E) has no religious undertones and focuses on breathwork and stillness, the theory behind mindfulness and meditation has origins in Buddhist beliefs. As a result, there were a handful of families that declined to participate in the project because they "did not want to introduce Buddhist beliefs into their Christian home".

The review of the literature when developing the project did not reveal that this may be a potential barrier to participation (Baijal & Gupta, 2008; Cairncross & Miller, 2016; Evans et al, 2017; Xue et al, 2019; Zhang et al, 2018). However, an additional review of the literature revealed that Christians, particularly conservative Christians, may view meditation and

mindfulness as incongruent to their religion because of its foundation in Buddhist beliefs. One core aspect of meditation is a nonjudgmental and receptive state of mind towards the past, present, and future (Baer, 2003; Brown et al, 2007; Hayes, 2003; Ie et al [Eds.], 2014; Kabat-Zinn, 2003; Langer, 2002; Olendzki, 2005). On the other hand, Christian meditation, often referred to as prayer, views the Bible and God's word as the focal point; it encourages the rejection of certain "sinful" thoughts, feelings, and actions and emphasizes repentance of past sins. This critical view of one's experience and encouraged atonement of "sins" directly conflicts with the foundation of Buddhist-based mindfulness and meditation (Brown, 2019; Crane, 2017; Rao, 1996). However, there are some similarities between mindfulness practice and Christian-based values; for example, both encourage loving compassion towards those around us (Symington & Symington, 2012).

There are also Christian supporters of mindfulness practice that encourage fellow Christians to extract the mechanics of mindfulness and meditation, such as breathwork and stillness, while not subscribing to the religious traditions the mechanics are attached to, like Buddhism. For example, when practicing breathwork, Christians may view breath as the gift of life from God and his presence whereas Buddhists focus on the self as an illusion. In other words, the intention behind the practice is what is important and can alter the meaning and function. These supporters emphasize that the benefits of mindfulness practice, including lower stress and feeling less controlled by immediate internal experience, may help improve the ability to embody Christian core values and beliefs in daily life (Symington & Symington, 2012). There are also resources available for Christian-based guided meditation, that focuses on breathwork and infuses scripture and prayer into the meditation practice. These might serve as a more acceptable option for patients (Frederick & White, 2015).

It has been established by the U.S Supreme Court, that a competent patients' right to refuse medical care because of religious or cultural beliefs is federally protected under the constitution (Starr, 2015); refusal to participate in mindfulness practice and guided meditation is no exception to this rule. Due to its Buddhist origins, some practicing Christians may refuse to participate in mindfulness and meditation, viewing it as practicing another religion, but others may not. Offering a reframing of mindfulness practice and suggesting ways to infuse personal religious beliefs into the practice may help encourage participation in the future (Frederick & White, 2015; Symington & Symington, 2012).

Lack of Patient Buy-In

Unfortunately, lack of patient buy-in can always be a barrier related to the initial agreement and continued compliance involving any modifications to treatment plans and this project was no exception. Lack of patient buy-in can also manifest in various ways; during this project, some patients refused participation because they believed they were too busy to add a new habit, they have tried meditation before and did not like it, or they have not tried it but do not think they will like it. All these manifestations related to a lack of patient buy-in can also be viewed as a resistance to change.

Assisting patients with changing behavior is a core element to improving health outcomes as a provider; consequently, effectively managing resistance to change is an important skill for providers to possess. Changing behavior is complex and can rarely be simplified to a single moment; additionally, there are many factors that may facilitate or impair a patient's ability or willingness to adopt and maintain a change. Utilizing the Stages of Change model can help clinicians assess where a patient is in their behavior change process and how to help them progress towards a successful change (Zimmerman et al, 2000).

Patients who were resistant or refused to try guided meditation would be in the precontemplation or contemplation stage. Those in the precontemplation stage show no interest in making a change whereas those in the contemplation stage are ambivalent about changing but believe the barriers to changing outweigh the potential benefits. The goal with these patients would then be to engage them in a process that would help progress them to the next stage. The next stages are preparation (preparing to make a change), action (taking action to make change), and maintenance (continuing change long term) (Zimmerman et al, 2000).

Facilitating a dialogue with patients is key to progress patients from the precontemplation or contemplation stages towards the next stages; providers need to assess the patient's response when the change is advised (i.e., try a guided meditation) in order to formulate an effective response. Keeping the conversation patient-centered is vital; utilizing techniques from motivational interviewing, such as empathy or reflective listening, can also be effective. Asking thought-provoking questions, continuing a positive relationship with the patient, and personalizing risk factors and potential benefit of change can over time help progress patients in the precontemplation and contemplation stages towards the next stage (Zimmerman et al, 2000).

Effectiveness of MBI on ADHD Symptoms and Components of Vanderbilt Scores

In this project, the effectiveness of the MBI on ADHD symptoms was measured by comparing pre-intervention and post-intervention Vanderbilt scores among participants. As a group (n=3), there was a 41% decrease in total symptom score, a 60% decrease in hyperactivity/impulsivity symptoms, and a 27% decrease in inattention symptoms. These results are similar to those found in the existing literature (Baijal & Gupta, 2008; Cairncross & Miller, 2016; Evans et al, 2017; Xue et al, 2019; Zhang et al, 2018). However, two of the results found that an MBI had a more significant impact on inattention symptoms as opposed to

hyperactivity/impulsivity symptoms (Xue et al, 2019; Zhang et al, 2018), whereas this project found that the MBI had a more profound impact on hyperactivity/impulsivity symptoms.

The patient, and her parent, that experienced a 94% reduction in her total symptom score reported that utilizing this guided meditation "completely changed our evening routines" and "has become something that we will regularly use". The patient who experienced a slight increase in her symptoms did not attribute it to using the MBI and perceived no harm from trialing the MBI; she even stated that she would want to keep using it because she perceived a benefit in her stress, sleep, and everyday life even if it did not affect her ADHD symptoms. Although these are examples from just two patients, it gives the impression that the potential benefit from trialing this MBI far outweighed its potential ineffectiveness.

It is unclear why the patient 3 experienced a slight increase of 6.9% in her total symptom score and a 33% increase in her inattention symptom score; however, on her questionnaire she also rated the MBI as "not at all" helping her ADHD. She also reported utilizing the guided meditation "daily or almost daily". This increase in her symptoms could simply be a coincidence and not caused by the guided meditation; given the patient's desire to continue the MBI and her perceived benefit in other areas of her life, it would be recommended that she continue the meditation. Although not anticipated, if her ADHD symptoms continue to worsen as she practices the guided meditation then this might need to be reevaluated.

The MBI was also observed to have positively impacted the scores of various comorbidities or coexisting disorders that are frequently associated with ADHD. The group experienced a 67% decrease in oppositional defiant disorder symptoms, a 100% decrease in conduct disorder symptoms, a 39% decrease in anxiety and depression symptoms, and a 13% decrease in performance in various academic and social arenas. This indication of a positive

impact in these various areas further supports trialing a guided meditation with patients with ADHD, especially if they experience any of these comorbidities or co-existing conditions.

Effectiveness of MBI on Sleep

The impact the MBI had on sleep was measured by comparing the pre-intervention and post-intervention Pediatric Insomnia Severity Index (PISI) scores of participants; a decrease in the score indicates an improvement on sleep and vice versa. The group on average experienced a 53% decrease in their PISI scores; additionally, all three patients individually experienced a decrease of 62.5%, 72%, and 26.9%, respectively. These results were unsurprising given that the positive benefits of meditation on sleep are well established; regular meditation, especially if practiced before bed, has been shown to help improve sleep disturbances such as difficulty falling and staying asleep (W. Kanen et al, 2015; Rusch et al, 2018).

Decreasing the severity an individual experiences sleep disturbances, and thus improving their overall sleep quantity and quality, can have a subsequent positive impact on their stress, performance, and relationships. Individuals with ADHD also not only frequently experience insomnia but report a worsening in their ADHD symptoms whenever they are tired; consequently, it is even more important for individuals with ADHD to ensure proper sleep habits and utilize tools that help decrease the severity of sleep disturbances and insomnia (Cheng, 2016; Wajszilber et al, 2018). As a group, the participants in this project experienced a decrease in their PISI scores as well as a decrease in their ADHD symptom scores and perceived benefit in their relationships, stress, and everyday life. However, it is unclear if this is in a correlation between sleep and outcomes (i.e., both improved from utilizing the MBI) or if improved sleep (from the MBI) then caused the improvement.

Patient Perceived Impact of MBI

As part of the follow-up for this project, patients/parents completed a post-intervention MBI evaluation questionnaire; part of the questionnaire asked participants to rate the impact the MBI had on stress, relationships, and everyday life. Response choices were on a scale from 1 to 5: not at all (1), a little (2), somewhat (3), quite a bit (4), a lot (5). Participants, on average, that reported that the MBI had helped manage their stress (3.67), improve relationships with others (3.33), and had a daily benefit (3). The existing literature also supports this finding; practicing mindfulness, including guided meditation, has been shown to help improve stress management, relationships with others, and have a positive impact on everyday life (Baer, 2003; Bishop et al, 2004; Brown et al, 2007; Cheng, 2016; Kabat-Zinn, 2003).

Implications for Future Projects and Practice

This project helped to generate a wealth of information that can be used to help inform future projects and practice.

Improve Patient Recruitment

One barrier to recruitment was the parents dislike of the patient keeping their cell phone in their room at night to access the guided meditation. Future projects should explore alternative methods of delivery for the guided meditation. One option is to pre-record the meditation on a portable recording device that patients can play back. However, this may be cost prohibitive and additional alternatives should be explored for future projects and clinic initiatives.

Because mindfulness and MBIs have originated from Buddhist beliefs, religious beliefs, particularly Christian beliefs, may serve as a barrier to willingness to incorporate mindfulness and guided meditation into the current treatment plan. Given that this clinic is considered a Christian practice by providers, staff, patients, and their families, continued recommendation of MBIs may

be met with some resistance. Providers can offer a reframing of mindfulness and meditation practice by encouraging patients/parents to extract the mechanics of breathwork and meditation and instill their own personal beliefs, such as prayer or scripture, into their practice. Additionally, this clinic could explore development or acquisition of Christian-based guided meditations to these patients.

Optimization for Telehealth Patient Involvement

At the time this project took place, the COVID19 pandemic was ongoing, but the number of in-person visits at this clinic was continuing to increase as state restrictions and case rates declined. However, the pandemic's impact on the use of telehealth visits will have a lasting impact at this clinic; many patients/parents prefer telehealth visits and have permanently requested them. Given that guided meditations and resources can be sent electronically to patients, the use of telehealth should not greatly impair a provider's ability to implement a guided meditation as a supplement to patient's current treatment plans. Other MBIs, such as yoga, may be harder to implement over telehealth and future projects would need to be focused on including these telehealth patients in a variety of MBIs.

EMR Utilization

One aspect of this project that was not explored was the use of utilizing the EMR infrastructure to help identify patients who might benefit from trialing an MBI and alerting providers to this recommendation. Future projects could focus on building this infrastructure that could automatically screen patients and recommend them to providers based on a defined set of parameters such as age and diagnoses. This recommendation to providers could also be embedded in the EMR infrastructure as some sort of alert or flag on the patient's chart. This may help remedy this project's issue of providers remembering to discuss trialing an MBI with patients.

Recommendations for Continued and Future Use

Despite the unexpectedly low sample size that was successfully recruited into this project, the results of this project support the recommendation to continue the use of trialing MBIs, including this guided meditation, at this clinic. Overall, there was an observed positive impact among patients and the potential benefit from trialing this MBI seems to outweigh its potential ineffectiveness; there were no observed negative impacts of trying an MBI with this patient population.

However, there are specific recommendations for continued and future use at this clinic to help maximize the potential positive impact MBIs can have. The MBI implemented during this project was a fairly simple one, consisting of a five-minute guided meditation that patients would use daily at bedtime. Future projects could involve MBIs that consist of longer, multi-week workshops; research has shown that these types of MBIs have a larger impact on ADHD symptoms (Cairncross & Miller, 2016; Evans et al, 2017; Xue et al, 2019; Zhang et al, 2018).

Regardless of the complexity of the intervention used in the future at this clinic, more frequent check ins with patients are recommended. For this project, there was no contact with patients in the four weeks between the initial visit when the intervention started and the follow-up. A couple of the patients that were successfully recruited into the project forgot to complete the guided meditation at home after the initial visit. Weekly reminders (i.e., phone calls) would have helped increase compliance to the MBI.

Another recommendation for this clinic is to involve the therapist, as opposed to the nurse practitioners, to be the primary implementors of the MBI. Therapists spend much more time with patients, visits are usually about an hour long; this would allow enough time for therapists to facilitate a discussion with the patient and practice the guided meditation during the visit without

feeling pressed for time. Provider visits on the other hand are typically 20-30 minutes depending on the reason for the visit (i.e, medication check). Therapists also will see their patients much more frequently than the provider will; therapists may see patients weekly or every other week whereas providers will usually see patients every 4-8 weeks depending on how stable the patient is on their current medication plan. Seeing the patient more frequently would allow for continued reinforcement of the new behavior change.

Limitations

One limitation of this project is small number of participants that was be included; this made it impossible to calculate inferential statistics and prove significance in the data. Furthermore, this project took place at a single clinic in North Carolina that specializes in mental and behavioral health issues; this specific setting makes it harder to generalize the findings. Patient compliance to practicing the guided meditation daily is another potential limitation; two patients failed to complete the MBI after the initial visit. This caused a decrease in the amount of available data and minimized the observed impact of the project. The duration of this project is also only 12 weeks; a longer duration would have allowed more time to recruit more patients into the project. Additionally, a longer project would have permitted time to make adaptions to the project (i.e., methods to recruit more telehealth patients or implement weekly phone check ins) that would have improved the success potential of the project. Extending the duration of the project would also allow patients more time to practice the guided meditation; this could have further positively impacted both the quantitative and qualitative outcome measures.

Strengths

Despite the limitations listed above, this project was successfully implemented; it was the first time that a MBI has been implemented at this clinic on a widescale level. Although the

sample size was small, preliminary data indicates that MBIs can be a positive addition to the treatment plan of adolescents and young adults with ADHD. No patients involved in the project experienced negative outcomes which suggests that the potential benefit of trialing an MBI outweighs the risk. It also generated valuable information that can be used to inform future projects and practices at this clinic.

Conclusion

Attention deficit hyperactivity disorder (ADHD) is a neurodevelopmental disorder that can greatly impair social interactions as well as academic and work productivity; because of the adverse long terms outcomes associated with ADHD, treatment with pharmacological and/or behavioral therapy is strongly recommended. Additional effective behavioral based therapy is needed to further minimize the effect of adverse long-term outcomes; individuals also respond differently to different therapies (Cairncross & Miller, 2016). Mindfulness-based interventions (MBIs) have been shown to significantly reduce ADHD core symptoms of inattention and hyperactivity/impulsivity (Cairncross & Miller, 2016; Evans et al, 2017; Xue et al, 2019); Zhang et al, 2018). This project sought to implement a simple MBI at a pediatric behavioral and developmental health clinic with adolescents and young adults with ADHD; this was the first time that a MBI had been implemented on a widescale level. The MBI, a five-minute guided meditation used daily at bedtime for four weeks, was shown to positively impact ADHD symptoms and sleep; additionally, patients perceived a positive impact on managing their stress, their social relationships, and their everyday life. Although the sample size (n=3) was smaller than expected, this project helped to support the recommendation that the potential positive impact of trialing and MBI outweighs potential ineffectiveness (no other adverse outcomes observed). This project also helped to generate new knowledge that can help inform future

projects and practices at this clinic for continued and expanded use of MBIs in this patient population.

APPENDIX A: NICHQ VANDERBILT ASSESSMENT SCALE

NICHQ Vanderbilt Assessment Scale—PARENT Informant

Today's Date: _____ Child's Name: _____ Date of Birth: _____

Parent's Name: _____ Parent's Phone Number: _____

Directions: Each rating should be considered in the context of what is appropriate for the age of your child. When completing this form, please think about your child's behaviors in the past 6 months.

Is this evaluation based on a time when the child ☐ was on medication ☐ was not on medication ☐ not sure?

Symptoms	Never	Occasionally	Often	Very Often
1. Does not pay attention to details or makes careless mistakes with, for example, homework	0	1	2	3
2. Has difficulty keeping attention to what needs to be done	0	1	2	3
3. Does not seem to listen when spoken to directly	0	1	2	3
4. Does not follow through when given directions and fails to finish activities (not due to refusal or failure to understand)	0	1	2	3
5. Has difficulty organizing tasks and activities	0	1	2	3
6. Avoids, dislikes, or does not want to start tasks that require ongoing mental effort	0	1	2	3
7. Loses things necessary for tasks or activities (toys, assignments, pencils, or books)	0	1	2	3
8. Is easily distracted by noises or other stimuli	0	1	2	3
9. Is forgetful in daily activities	0	1	2	3
10. Fidgets with hands or feet or squirms in seat	0	1	2	3
11. Leaves seat when remaining seated is expected	0	1	2	3
12. Runs about or climbs too much when remaining seated is expected	0	1	2	3
13. Has difficulty playing or beginning quiet play activities	0	1	2	3
14. Is "on the go" or often acts as if "driven by a motor"	0	1	2	3
15. Talks too much	0	1	2	3
16. Blurts out answers before questions have been completed	0	1	2	3
17. Has difficulty waiting his or her turn	0	1	2	3
18. Interrupts or intrudes in on others' conversations and/or activities	0	1	2	3
19. Argues with adults	0	1	2	3
20. Loses temper	0	1	2	3
21. Actively defies or refuses to go along with adults' requests or rules	0	1	2	3
22. Deliberately annoys people	0	1	2	3
23. Blames others for his or her mistakes or misbehaviors	0	1	2	3
24. Is touchy or easily annoyed by others	0	1	2	3
25. Is angry or resentful	0	1	2	3
26. Is spiteful and wants to get even	0	1	2	3
27. Bullies, threatens, or intimidates others	0	1	2	3
28. Starts physical fights	0	1	2	3
29. Lies to get out of trouble or to avoid obligations (ie, "cons" others)	0	1	2	3
30. Is truant from school (skips school) without permission	0	1	2	3
31. Is physically cruel to people	0	1	2	3
32. Has stolen things that have value	0	1	2	3

Adapted from the Vanderbilt Rating Scales developed by Mark L. Wolraich, MD.

Revised - 1102

American Academy of Pediatrics

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NICHQ National Initiative for Children's Health Quality

McNeil Consumer & Specialty Pharmaceuticals

NICHQ Vanderbilt Assessment Scale—PARENT Informant

Today's Date: _____ Child's Name: _____ Date of Birth: _____

Parent's Name: _____ Parent's Phone Number: _____

Symptoms (continued)	Never	Occasionally	Often	Very Often
33. Deliberately destroys others' property	0	1	2	3
34. Has used a weapon that can cause serious harm (bat, knife, brick, gun)	0	1	2	3
35. Is physically cruel to animals	0	1	2	3
36. Has deliberately set fires to cause damage	0	1	2	3
37. Has broken into someone else's home, business, or car	0	1	2	3
38. Has stayed out at night without permission	0	1	2	3
39. Has run away from home overnight	0	1	2	3
40. Has forced someone into sexual activity	0	1	2	3
41. Is fearful, anxious, or worried	0	1	2	3
42. Is afraid to try new things for fear of making mistakes	0	1	2	3
43. Feels worthless or inferior	0	1	2	3
44. Blames self for problems, feels guilty	0	1	2	3
45. Feels lonely, unwanted, or unloved; complains that "no one loves him or her"	0	1	2	3
46. Is sad, unhappy, or depressed	0	1	2	3
47. Is self-conscious or easily embarrassed	0	1	2	3

Performance	Excellent	Above Average	Average	Somewhat of a Problem	Problematic
48. Overall school performance	1	2	3	4	5
49. Reading	1	2	3	4	5
50. Writing	1	2	3	4	5
51. Mathematics	1	2	3	4	5
52. Relationship with parents	1	2	3	4	5
53. Relationship with siblings	1	2	3	4	5
54. Relationship with peers	1	2	3	4	5
55. Participation in organized activities (eg, teams)	1	2	3	4	5

Comments:

For Office Use Only

Total number of questions scored 2 or 3 in questions 1–9: _____

Total number of questions scored 2 or 3 in questions 10–18: _____

Total Symptom Score for questions 1–18: _____

Total number of questions scored 2 or 3 in questions 19–26: _____

Total number of questions scored 2 or 3 in questions 27–40: _____

Total number of questions scored 2 or 3 in questions 41–47: _____

Total number of questions scored 4 or 5 in questions 48–55: _____

Average Performance Score: _____

American Academy of Pediatrics
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NICHQ
National Institute for Children's Health Quality

McNeil
Consumer & Specialty Pharmaceuticals

APPENDIX B: PEDIATRIC INSOMNIA SEVERITY INDEX TOOL (PISI)

Pediatric Insomnia Severity Index

Please answer each of the following questions about your child's sleep. The following statements are about your child's sleep habits and possible difficulties with sleep. Think about the past week in your child's life when answering these questions. If last week was unusual for a specific reason (such as your child had an ear infection and did not sleep well or the TV set was broken), choose the most recent typical week.

Use the following scale when answering the questions

	0	**1**	**2**	**3**	**4**	**5**
	Never	**Once in a while**	**Sometimes**	**Quite Often**	**Frequently**	**Always**
	(0 nights)	(1-2 nights)	(2-3 nights)	(4-5 nights)	(5-6 nights)	(7 nights)
1) My child takes longer than 30 minutes to fall asleep after going to bed	0	1	2	3	4	5
2) My child has trouble falling asleep at bedtime.	0	1	2	3	4	5
3) My child awakes more than once during the night	0	1	2	3	4	5
4) After waking during the night may child has trouble returning to sleep	0	1	2	3	4	5
5) My child appears sleepy during the day	0	1	2	3	4	5

	Number of hours per night					
	11-13	**9-11**	**8-9**	**7-8**	**5-7**	**less than 5**
6) How many hours of sleep does your child get on most nights?	0	1	2	3	4	5

APPENDIX C: POST-INTERVENTION PATIENT EVALUATION OF MBI QUESTIONNAIRE

The following questionnaire is part of the evaluation for the guided meditation that has been a part of your treatment plan for the last few weeks. It is important that you answer as honestly as possible. The information obtained will help us evaluate and continually improve how we offer mindfulness-based interventions here at the clinic.

Thank you again for participating in this intervention. Your cooperation is greatly appreciated!

Please circle the appropriate response that best reflects how you feel.

1. How often did you use the guided meditation?
    a. Only during the initial visit
    b. 1-4 times (about once a week)
    c. 5-15 times (about 2-3 times a week)
    d. 16-24 times a week (about 4-5 times a week)
    e. Daily or almost daily

2. How easy was it to access the guided meditation at home?
    a. Very easy, no problems
    b. I had a little trouble, but I was able to access it
    c. I was unable to access it

3. If you were unable to access the guided mediation at home, what was the reason?
    a. No internet/computer access
    b. Link or meditation would not load when accessed
    c. Other: _____

4. Did you utilize any of the other online resources listed on the pamphlet?
    a. Yes
    b. No

5. If yes, which extra resources did you use and find most beneficial?

    _____

    _____

6. How much did you enjoy using the guided meditation?

Not at all A little Somewhat Quite a bit A lot

7. To what degree has using this guided meditation helped improve your ADHD symptoms overall?

Not at all A little Somewhat Quite a bit A lot

8. To what degree has using this guided meditation helped you improve your ability to manage your stress overall?

Not at all A little Somewhat Quite a bit A lot

9. To what degree has using this guided meditation helped you improve your relationships with others, including family and friends?

Not at all A little Somewhat Quite a bit A lot

10. To what degree has using this guided meditation helped benefit your everyday life?

Not at all A little Somewhat Quite a bit A lot

11. How has this guided meditation benefited you? What was useful about it or how did using it affect you? Did you notice any other changes?

_____
_____

_____
_____

12. How likely are you to continue using this guided meditation or other mindfulness in your everyday life?

Not at all A little Somewhat Quite a bit A lot

13. How well do you think your provider educated you on mindfulness and guided mediation during the initial visit?

Not at all A little Somewhat Quite a bit A lot

14. Did you feel adequately prepared to practice the guided meditation at home after the first visit?

Not at all A little Somewhat Quite a bit A lot

15. What barriers, if any, prevented you from using the meditation?

_____
_____

_____
_____

16. My overall feeling about this guided meditation is:

Very negative Negative Neutral Positive Very Positive

17. Please write down anything you did not like regarding the mediation or how we can improve for future patients:

_____
_____

_____
_____

Please submit this paperwork to the reception desk. Thank you again for your cooperation and feedback!

APPENDIX D: LOGIC MODEL – MBI IN PATIENTS 12+ WITH ADHD

Program: Guided meditation MBI in patients at least 12 years old with ADHD Goal: Decrease severity of ADHD symptoms; perceived patient benefit					
INPUTS	ACTIVITES		OUTCOMES		
What we invest	What we do	Who we reach	Why this project: short-term results	Why this project: intermediate results	Why this project: long-term results
-Time -Materials: educational pamphlets -Research findings -Technology: Recording of guided meditation	-Educate providers -Develop MBI and educational pamphlets -Facilitate access to information -Adjust program as needed throughout duration -Conduct feedback discussions with providers -Collect data from patients: scale scores and questionnaire -Program evaluation	-Providers who care for pediatric patients with mental and behavioral health issues -Patients 12 years and older with ADHD -Possibly parents of these patients	*Learning* -Increase provider awareness of mindfulness and MBIs (benefits, how to implement, etc.) -Increase patient knowledge of mindfulness and guided meditation (benefits, how to practice, etc.) -Motivation for patients to engage in new health behaviors -Change in provider and patient attitude towards mindfulness and MBIs	*Action* -Willingness to practice new behaviors (provider and patient) -Integrate feedback from project to develop recommendations for future improvements -MBI continued as supplement to treatment plan at conclusion of project	*Conditions* -Continued use of this implementation can help decrease ADHD symptoms and improve overall patient quality of life. This can help decrease the occurrence of long-term adverse outcomes. -A successful project could lead to expansion in the clinic to patients with other diagnoses, improve patient outcomes, and improve provider attitudes regarding MBI

Assumptions	*External factors*
-Daily practice of mindfulness with a guided meditation can help reduce ADHD core symptoms and have a perceived benefit on patient's everyday life	-Patients do not practice MBI at home (could be due to lack of time, forgetfulness, belief that it is not effective) -Providers may not buy into possible benefit of MBI which could result in less effective initial implementation

APPENDIX E: GUIDED MEDITATION SCRIPT

Hello and welcome to the guided meditation. Before we begin, take a few moments to get into a comfortable, seated position. This can be sitting in a chair with your feet flat on the floor or sitting on the floor in a cross-legged position. Rest your hands wherever they are comfortable and keep your eyes gently open. Notice the weight of your body pressing into the floor or chair. Relax any areas of tension. Notice what you are thinking and how you are feeling right now. (3 second pause). Begin by taking three big deep breaths, in through the nose and out through the mouth. As you breath in, notice how the body expands, as you breath out, notice how the body softens. On the third exhale, gently close your eyes.

(5 seconds of silence)

Now bring your awareness to your breath. You do not need to do anything to change your breath, just notice how you are breathing naturally. Notice where you are feeling the breath, that rising and falling sensation. This can be in the nose, chest, belly, or any other place. If you are having trouble feeling it, you can place a hand on your chest or belly to feel the movement.

Breathe in and be aware of the breath going in and then breathe out, being aware of the breath going out. Be aware of your breath from moment to moment, as it ebbs and flows, like waves in the sea. Notice the rhythm of the breaths. Whether they are fast or slow, deep or shallow.

(insert silence)

From time to time, it is natural for the mind to wander from the breath. You may start to think about other things. You may feel restless. This is not a problem and its totally normal, everyone has thoughts continually throughout the day and during this practice. When you notice this happening, gently bring your focus back to breathing and that rising and falling sensation, without judgment. Allow those thoughts to be just now and notice them go by. No need to cling to them or ignore them. Allow them to show up and then continue on, like a leaf passing by in a stream. Oh interesting, this is what I am thinking right now. Oh interesting, this is what I am feeling right now.

If you like, you can count the breaths in your mind. Inhale (one), exhale (two), continuing to ten then starting back at one. If you lose track of counting, simply start back at one. Notice any frustration that happens. There's no need to feel frustrated, distractions will happen.

(insert silence)

Now we will sit in some silence with our breath, breathing in and out. From time to time our thoughts will wander and we will gently bring our attention back to the breath. Try to be really kind to yourself during this process.

(insert silence)

(start at 4:40)

Notice how you are feeling right now and take this feeling with you into the rest of your day if you choose. Take a few moments to thank yourself for taking the time to do this practice and recognize that this is an act of self-love.

When you are ready, gently open your eyes again.

APPENDIX F: EDUCATIONAL HANDOUT FOR PROVIDERS

This mindfulness-based intervention will be delivered as the last aspect of the patient visit. Begin by asking your patient if they have any experience with mindfulness or meditation. If they have, what was their experience (i.e., positive, negative)? It is important to recognize and address any possible barriers to compliance (i.e., lack of belief that it will benefit them). You can also use the following information to help educate patients and encourage use.

WHAT IS MINDFULNESS?

Mindfulness can be thought of as paying attention in a particular way and on purpose, focusing on the present moment in a nonjudgmental way. It involves shifting out of autopilot and paying attention to what is happening right now instead of thinking of the past or worries about the future. It can be hard to describe what mindfulness feels like, but many have described feeling calm, connected, openhearted, having awareness, feeling gratitude, and being present. Maybe you have had moments while doing something, such as playing a sport or instrument, listening to music, or stroking your pet that you felt like only the present moment mattered, when you weren't thinking of the past and future and were fully engaged in whatever you were doing. That's mindfulness!

HOW CAN MINDFULNESS BE AFFECTIVE FOR THOSE WITH ADHD?

Many people who have ADHD struggle with focusing their attention and controlling their behavior or emotions; they may be impulsive or experience frustration and anger. Research has shown that practicing mindfulness can improve all of these things! In general, practicing mindfulness has been shown to decrease stress and anxiety, improve sleep, relationships, and mood while also increasing overall happiness and focus.

IMPORTANT TIPS ABOUT MEDITATION

The important thing about meditation is that it is not about trying to turn off your feelings or thoughts. You are learning to observe them without judgment. Meditating can seem weird and hard at first, and that's totally normal. Consistent practice makes it more comfortable and easier. We also call it practice because it doesn't have to be perfect! Sometimes you will lose focus or your mind will wander. That's okay and totally normal! The act of practicing is beneficial even if it's not perfect.

INSTRUCTIONS TO GIVE PATIENT

For now, we are going to add this 5-minute guided meditation as part of your treatment plan. Over the next 4 weeks, practice this guided meditation every day. I will also have a handout for you to take home that tells you how to listen to the mediation (it will be emailed to you and is available on the clinic website), tips on how to practice at home, and additional online resources about mindfulness that you can use. Whenever you want to practice this guided meditation, find

a nice quiet place where you will not be disturbed. Find a comfortable seated position: sitting in a chair with feet flat on the floor or sitting cross legged on the floor is fine.

Ensure that environment is quiet, and the session will not be interrupted. All participants should find a comfortable seated position.

PLAY GUIDED MEDITATION. PARTICIPATE ALONGSIDE PATIENT.

ASSESS PATIENT'S INITIAL REACTION TO MEDITATION

How do you feel? For example, do you feel calmer more focused, or more aware?

Note: If patients seem to dislike the meditation or have a negative reaction, assess why. Reinforce that meditation can be weird and uncomfortable at first but that it becomes easier with practice.

FINAL INSTRUCTIONS

Don't forget to try and practice this guided meditation every day until your next appointment. Sometimes it can be helpful to attach this activity to another habit you already have, like brushing your teeth. For example, whenever you brush your teeth in the morning (or at night), immediately go and practice your guided meditation. Learning to meditate is like learning any new skill, you can even think of it as exercising your brain in a way that you really haven't before! It may feel uncomfortable to meditate at first, but consistent practice makes it easier. Remember, meditation is not about trying to turn off your feelings or thoughts. You are learning to observe them without judgment while focusing on only the present moment.

GIVE THEM THE PATIENT HANDOUT

APPENDIX G: EDUCATIONAL HANDOUT FOR PATIENTS

Thank you for participating in this project and welcome to the beginning of your mindfulness journey! This handout is for you to take home and reference whenever you need.

How to Use the Guided Meditation

- Practice this guided meditation every day until your follow-up appointment.
- Ensure that you are in a quiet place where you will not be disturbed.
- Find a comfortable, seated position. This can be sitting in a chair with your feet flat on the floor or sitting cross legged on the floor. You can use a cushion or blanket to sit on if you want.
- Access the guided meditation by either:
    - Downloading the audio file from the email sent by your provider.
    - Visting the clinic's website where the meditation is posted.
- Remember, meditation is not about trying to turn off your feelings or thoughts. You are learning to observe them without judgment while focusing on only the present moment.

Frequently Asked Questions

Q: What is mindfulness anyways?
A: Mindfulness can be thought of as paying attention on purpose by focusing on the present moment. It is not about trying to turn off your feelings or thoughts. You are learning to observe them without judgment. It involves shifting out of autopilot and paying attention to what is happening right now instead of thinking of the past or worries about the future.

Q: What does being mindful feel like?
A: It can be hard to describe what mindfulness feels like, but many have described feeling calm, connected, openhearted, having awareness, feeling gratitude, and being present. Maybe you have had moments while doing something, such as playing a sport or instrument, listening to music, or stroking your pet that you felt like only the present moment mattered, when you weren't thinking of the past and future and were fully engaged in whatever you were doing. That's mindfulness!

Q: Meditating feels weird!
A: Practicing mindfulness and meditation can seem weird and hard at first, and that's totally normal. Learning to meditate is like learning any other skill, you can even think of it as exercising your brain in a way that you really haven't before! Consistent practice makes it more

comfortable and easier. We also call it practice because it doesn't have to be perfect! Sometimes you will lose focus and your mind will wander. That's okay and totally normal! The act of practicing is beneficial even if you do not feel like you are doing it perfectly.

Q: Why would this help with my ADHD symptoms? Why is mindfulness a positive thing?
A: Many people who have ADHD can struggle with focusing their attention and controlling their behavior or emotions; they may be impulsive or experience frustration and anger. Research has shown that practicing mindfulness can improve all of these things! In general, practicing mindfulness has been shown to decrease stress and anxiety, improve sleep, relationships, and mood while also increasing overall happiness and focus.

Q: Help! I keep forgetting to do the meditation!
A: Learning a new habit can be hard! Sometimes it can be helpful to attach this activity to another habit you already have, like brushing your teeth. For example, whenever you brush your teeth in the morning (or at night), immediately go and practice your guided meditation.

Q: Where can I find more information about mindfulness or additional guided meditations?
A: Glad you asked! Here is a list of websites or mobile applications you can try (but make sure you are doing your guided meditation every day still!)

- Mindfulness for teens: http://mindfulnessforteens.com
    - Has information about mindfulness, helpful videos, blog posts, and additional free guided meditations.
- UCSD Center for Mindfulness: https://mbpti.org/
    - Has free guided meditations
- UCLA Mindful Awareness Research Center: https://www.uclahealth.org/marc/default.cfm
    - Has free guided meditations and additional informational resources
- Mobile Applications (some are free, some may require purchase)
    - Headspace; Calm; Breathr; Stop, Breathe and Think; Insight Timer; Plum Village: Zen meditation; Mindshift; Smiling Mind

Q: Do you have any information about mindfulness for my parents?
A: Of course! They are welcome to check out all the resources listed above or these that are recommended specifically for parents:

- *Everyday Blessings: The Inner Work of Mindful Parenting* by Jon and Myla Kabat-Zinn
- Meditation for Children: http://www.freemeditation.com/online-meditation/meditation-for-children/
    - Designed for younger children but has additional information and free guided meditations.

APPENDIX H: PROJECT BRIEF FOR PROVIDERS AND OFFICE STAFF

Lauren Pace DNP Project
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Title

Five-Minutes of Mindfulness: Utilizing Guided Meditation to Supplement ADHD Treatment Plans in Adolescents and Young Adults

Dates of Project

April 26th-June 11th
Patient Recruitment April 26th- May 7th (2 weeks)
Follow-up May 24th-June 11th

Eligibility Criteria

- Age 12-21 years old
- Diagnosis of ADHD (can have other diagnoses as well)

Project Overview

- Purpose of project is to add on a five-minute guided meditation to current treatment
- Mindfulness and meditation have been shown to help decrease severity of ADHD symptoms and improve sleep
- You will complete a five-minute guided meditation daily for next month until your follow-up appointment. At follow-up you will be asked to complete a brief survey about your experience
- Meditation will be on the clinic website or your provider can send the file it to you to download
- Lauren Pace is a graduate student at UNC to become a nurse practitioner and part of her doctorate degree is completing this project

Work Flow – Initial Visit

1. Patients will be given packet containing consent signature form, HIPAA consent, Vanderbilt, sleep screening tools, and patient education handout (made in packet).
    a. Can place in box in reception when completed
2. Give patients laminated consent form to read
    a. Corresponds with age of patient and parental consent if needed
3. During office visit, patients will participate in five-minute guided meditation
    a. Meditation is uploaded on clinic website and pinned to top of messages on turquoise office cell phone and saved in files of red office cell phone
4. Patients instructed to practice daily until next appointment
    a. Meditation audio file is on clinic website but can also be emailed to airdropped to them if they prefer

Work Flow – Follow-up

1. Patients will be given packet containing Vanderbilt, sleep screening tools, AND evaluation survey upon arrival to the clinic.

    a. Can place in box in reception when completed
2. Providers can ask about meditation experience if they want

APPENDIX I: PROJECTED PROJECT OUTCOMES

1. The program effectively decreases ADHD core symptoms, demonstrated on NICHQ Vanderbilt Symptom Scale Scores.

2. Patients perceive a benefit of the MBI on their ADHD symptom management, stress, social relationships, and overall everyday life.

3. The program effectively improves sleep and decreases insomnia, demonstrated on the Pediatric Insomnia Severity Index score.

4. Providers feel comfortable and confident in delivering an MBI to their patients, demonstrate a belief in its effectiveness, and willingness to continue utilizing MBIs as part of their patients' treatment plan.

5. Knowledge gained from the program is utilized for project sustainability in this population and expansion to other diagnoses treated at the clinic.

6. Identifications of barriers and facilitators of the project that could impact future project sustainability and expansion.

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